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A REVIEW OF THE MEDICAL LITERATURE OF 1906.

EDITORIAL.

A NEW PENOLOGY.

Our present penology, as evidenced by a superficial glance at the headlines of any issue of our daily press, would not seem to the casual observer to be an efficacious system for the prevention and punishment of crime. Fairly reeking with stories of hold-ups, porch-climbing, pocket-picking, safe blowing and social-highwaymanry, convincingly illustrated with photographs and pen-sketches, the picturesque and suggestive side of crime is daily brought home to all of us. The public mind teems with the appreciation of criminal exploits. Good or bad as this publicity may be,—doubtless in certain methods of high finance it has been for the good—a serious consideration of crime, the criminal and his punishment, brings us face to face with the glaring faults in our present penology.

Sir James Stephen says that in early times the fear of private vengeance was the only check upon crime. We know that among the English, justice originally sprung from each man's personal action. Every freeman was his own avenger. This system of private punishment degenerated into blood feuds and anarchy, and it became necessary for the state to assume the office of inflicting punishment on wrongdoers. As pointed out by Eugene Smith, in a recent article in the *North American Review*, the state became, through its criminal laws, the avenger of all crime, based upon the theory that punishment for crime should be retributive. Punishments came into use, which were characterized by the cruelest tortures that malignity could devise. The softening influence of Christianity and advancing civilization put an end to physical torture, and imprisonment for all felonies except capital ones was generally adopted as a means of punishment. This is our present penology, the state occupying the position of inflicting a punishment upon the criminal that actually fits his

crime as near as justice, through our criminal laws, is able to accommodate the retributive punishment.

As a result of this system, not less than 10,000 of the most dangerous criminals are released every year from the prisons of the United States, regardless of the fact that the prison authorities may positively know that they will return to a life of crime, and that they will immediately, not only plunder and kill, but as experts lead and train the entire criminal class. Mr. Smith, in commenting upon this appalling situation, says that in his opinion future generations will inquire with wonder for an explanation of our amazing folly. When we had these dangerous criminals in secure confinement, why did we open to them the prison gates, knowing full well that the lives and welfare of the entire community were thereby endangered?

A new penology seems, therefore, to be a thing most earnestly to be desired. It should be based upon the *indeterminate sentence*, and should offer to the wrong-doer the advantages that have already been proven to exist in a thorough reformatory system in prisons. The criminal should be treated as one temporarily estranged from normal mentality, in fact, as one sick in mind. The idea of retributive action on the part of the state should be abandoned. We feel that to secure this end, boards should be established to pass upon the mental status of each criminal before he is released, that prison authorities should better understand the psychology of crime, and that no criminal should be regarded as having made compensation for his evil deed until he can satisfactorily pass muster before those skilled in the observation of criminals, and be set at liberty only when he is fitted for normal citizenship.

The demand for a new penology is imperative, and the realization of the demand depends upon public education to a point where these things are seen clearly. It should be a duty of the medical man to understand these questions and do his part in this most serious step toward the advancement of our civilization.

THE SURGEON'S POWER OF LIFE AND DEATH.

A subject fraught with interest to American surgeons is Dr. J. A. Rigby's article on 'The Surgeon's Power of Life and Death in the *Independent Review* (London) for December. Were the article published in a medical journal, mild if any excitement would attend, but its appearance in a literary journal whose circulation may be large, but whose readers are undoubtedly composed of all strata of society, must perforce give us pause, so that a protest may be lodged against a writer whose written thought indicates a narrowness of horizon and a multitude of prejudices, surprisingly out of keeping with medical progress.

Dr. Rigby is another illustration of that large class of modern physicians who use the lay press to tell the public the mistakes of others and the infallibility of themselves. He asserts among other things that "gradually, progressively, almost imperceptibly, there has of recent years arisen in our midst a new tribunal—endowed with the power of deciding questions of life and death and there is no appeal whatever from its decisions, which are practically immutable and irresistible." Just why this is called a new tribunal is not evident, for he who reads the history of medicine and surgery intelligently, cannot fail to recognize that from time immemorial the doctor or surgeon in charge of a case was the power supreme to decide whether or not a certain course of treatment was necessary, or an operation imperative. We have never heard that the lowest or highest court in a country ever interfered, or that an appeal to a king, prime minister or president, was necessary before an operation could be undertaken.

To controvert Dr. Rigby's contention "that the terrible power of life and death was placed in the hands of an inexperienced youth, practically without any safeguard," we would suggest that the inexperience of the modern surgeon is as nothing compared with the inexperience of the surgeon of quite recent date, say fifty years ago, when, according to our interpretation of the courageous words of Dr. Rigby, the tribunal was unrelated to its modern offspring. Life, today, before that awful tribunal which seems to loom large in Dr. J. A. Rigby's provincial brain is no less safeguarded than in the good old days when a surgeon, during an operation, held a knife or two in his mouth, provided it was large enough, and thought water in its pristine state good enough and Listerism a farce.

The cold water cure of Vincenz Priessnitz was devised for certain ailments but we doubt, with considerable forbearance and graciousness, whether an ovarian tumor could be cured even by its daily application. Goose grease has many virtues, but though constantly and assiduously applied in a case of appendicitis, failure undoubtedly would result. And there are many other remedies that have been lauded to supplant operations, not to mention the unique one of the immortal Sairy Gamp, who drank the whiskey herself instead of administering it to her patient, thus illustrating by irradiation (her laden breath was supposed to strengthen the patient, indirectly) the first principles of "Science and Health."

To return to the "tribunal," which word seems to be an irritant to the doctor's composure, the only tribunal, when a conscientious surgeon is brought face to face with the problem whether or not to operate, is that which is evolved from his inner consciousness, strengthened as it should be by knowledge, judgment and mental equilibrium. If, in his opinion, an operation is necessary, he is doing what is right and proper in declaring it to his patient, for the statement is not the idle thought of an idle moment, but the quintessence of many thoughts which his read-

ings and observations in many fields have innured him to. Tribunals such as Dr. Rigby would have us venerate are about as awe-inspiring and formidable as Tennyson's "World's Great Altar Stairs" and would cause so much vacillation on the part of the surgeon that timidity instead of judgement-plus-tempered-audacity would result. And vacillation is not to be thought of in connection with the Surgeon's Power of Life and Death, for if once it usurps the decisive, clean-cut attitude of the forceful surgeon, it shakes the confidence of the patient and destroys the sureness, the coolness, the equilibrium of the operator.

LITERARY NOTES.

A book whose appearance is most opportune at a time when the founder of Christian Science is being exploited in our weeklies and monthlies is Mark Twain's work on Christian Science, which the Harpers promise to have ready for publication February 7th. The author, though famous as a humorist, can be serious when he wants to; and of all the subjects which have engrossed him during the past decade none has moved him to more serious thought and reflection than Christian Science. The advance sheets show that his pen has lost none of its cunning. To prove this we cite the following:

"It was night by this time, and she could not conveniently come, but sent word that it was no matter, there was no hurry; she would give me 'absent treatment' now, and come in the morning; meantime she begged me to make myself tranquil and comfortable and remember that there was nothing the matter with me. I thought there must be some mistake.

"Did you tell her I walked off a cliff seventy-five feet high?"

"Yes."

"And struck a boulder at the bottom and bounced?"

"Yes."

"And struck another one and bounced again?"

"Yes."

"And struck another one and bounced yet again?"

"Yes."

"And broke the boulders?"

"Yes."

"That accounts for it; she is thinking of the boulders. Why didn't you tell her I got hurt, too?"

"I did. I told her what you told me to tell her: that you were now but an incoherent series of compound fractures extending from your scalp-lock to your heels, and that the comminuted projections caused you to look like a hat-rack."

"And it was after this that she wished me to remember that there was nothing the matter with me?"

"Those were her words."

No wonder Mark Twain exclaims that he sometimes thinks it "a pity that Noah did not miss the boat."

ORIGINAL ARTICLES.

THERAPEUTICS.

IN CHARGE OF

WM. ENGELBACH, M. D.

SERUM AND VACCINE THERAPY.—The advancement of this branch of therapy during the last year has equalled, if not surpassed, that of any division of scientific medicine. Based upon the absolute results of the establishment of new means of therapy, a review of the work done along this line is not conclusive. The relative value of the immense amount of investigation for the production of immunity and the development of specific treatment of disease, has done much, however, towards establishing a scientific basis for this form of therapy. The lack of physiologico-chemical knowledge, and the limited amount of time and observation to which this method of therapy has been subjected makes it to a great extent experimental. Yet the progress made in the course of the investigation and application of this means of therapy concerning the pathogenesis, the primary cause and effect, and the reaction of the cellular elements of organisms to disease, has led to the prediction that the future will develop by this means a rational therapy which will accomplish more than any treatment we have hitherto thought possible.

The advancement made in new serum therapy of any positive value then has not been great. The application of this method of treatment has been greatly extended into the other great classes of diseases now known as noninfectious and many changes have taken place in the preparation, indications, use and administration of the established and nonaccepted serums. Among the greatest achievements conferred by this research is the establishment of some of the causes for the non-effectual results of this means of treatment of certain diseases. Perhaps the most marked impression that this year has made upon medical progress is the notable development of vaccine treatment. These investigations pertaining to this means of producing active immunization have more or less perfected a method of determining and controlling this immunity by means of the opsonins and the hemolysis of the blood. The application of these control tests has provided a scientific basis for the administration of all these products, serum, vaccine, and organ extracts. Although vaccination has not been used extensively during the past, the present trend of investigation seems to warrant its extensive application in those diseases in which a specific organism has been isolated, and to indicate that it is destined to become one of the leading therapeutic measures of the future.

GENERAL CONSIDERATION.—From the present conception of this subject, serum therapy means the administration of serum which has either antitoxic or antibacterial properties for prophylactic or curative purposes. These serums are prepared by inoculations of animals with specific substances for which an antiserum is desired. The specific substances are: (1) bacterial, as diphtheria, tetanus, etc.; (2) animal, from snakes, toads, scorpion, etc.; (3) plant, as mushroom, and (4) tissues, as exophthalmic thyroid gland, etc. The substances may then be: (1) The exciting cause of the disease; (2) products or derivatives of the exciting cause of the specific disease; (3) products from animal and vegetable tissue, in case the specific cause is unknown. These substances when inoculated in small and increasing doses into susceptible animals create in the blood serum of those animals anti-bodies which produce a tolerance in those animals for more than a toxic dose of that specific substance. The production of these anti-bodies by means of the organism itself, as an effect of inoculation, is termed "Active Immunization," and this method of inducing increased resistance against a specific substance is known as "Indirect Serum Therapy." When these anti-bodies produced in one organism are used to protect another organism against these specific substances, the method is that of "Direct Serum Therapy" and the protection conferred is "Passive Immunity."

Vaccination, used in the sense meant by Jenner and Pasteur, refers to the inoculating into man of living bacteria of attenuated virulency. But as regarded to-day the definition of this term must be extended to the inoculation of attenuated or killed micro-organisms, or even more liberal, to the production of active immunity by the inoculation of some specific product. Wright limits the use of this term to "the inoculation of a standardized sterile suspension of micro-organisms." The increase of resistance produced in man by this method is therefore "Active Immunity," and this indirect means of producing immune serum in man is termed "Indirect Serum Therapy." Active immunization forms its specific anti-bodies over long periods of time causing a more protracted protection than that of passive immunity. It has been proven experimentally that this resistance persists after anti-bodies cease to form. This is explained upon the assumption that the cells of the body have been trained to produce corresponding receptors and if subsequently the same bacteria gained entrance into the body, new anti-bodies are formed so fast that the incipient infection is overcome. It is not absolutely necessary, if a broad meaning of this term is allowed, for the cause or organism of disease to be known. In smallpox and hydrophobia, for instance, this method of treatment has been accepted and yet the virus is unknown. It is especially applicable, however, to those diseases caused by bacteria which secrete no soluble toxins, but contain in their protoplasm certain endo-toxin. These diseases cause an immunity of considerable duration, and the serum

agglutinate the corresponding organism. The serum has, however, little or no curative value and the production of antitoxin is questionable. The successful treatment of these diseases, such as typhoid, dysentery, cholera and plague, by the means of vaccination is one of the expected developments of the near future. The wide applications of this method is illustrated by the work of Turton and Parkin who accepted this general plan for the treatment of diseases. They ascertained the exact causal germ and estimated the opsonic index of the patient for that particular bacteria. The general plan was to create, by means of vaccination of the causal germ, anti-bodies in the serum indicated by the behavior of the opsonic index. Among the conditions treated were bacillus coli infections, intestines, and lymph-glands, meningitis, hip and spinal diseases. The amount of the benefit derived was varied. The acute cases were the most difficult on account of the limited time in which to raise the opsonic power to such a degree as to influence the cause. Weinstein used this method, according to Wright's principles, in the treatment of surgical infections, for example, chronic fistula, which were difficult to heal by other means. He reported favorably upon this method and confirmed the findings of Wright in every particular.

One of the difficulties of this method is the danger that the inoculated virus is sufficiently attenuated or sterile to prevent causing fatal disease in man. The difficulty of the attenuation or sterilization of certain virus is exceedingly great, for instance, the process may take years as in plague. Otto, Kolle and Strong, succeeded in performing the sterilization and vaccination of plague virus successfully on humans. After carefully testing cultures of plague on animals, they made a series of inoculations into prisoners sentenced to death, with no deleterious results. The study of the agglutination and the inoculation of the serum from the prisoners gave abundant evidence that the vaccinations were effective. The warning, however, must be duly sounded that unless utmost care is taken, untoward results will surely follow the inoculation into humans of substances of unknown virulence.

CLASSIFICATION.—From the above general discussion the intimate relationship existing between these two forms, of serum or indirect, vaccine or direct, serum therapy is demonstrated. One is merely the complement of the other, and it is this fact which makes them difficult of discussion singly. For this reason they are considered more or less together in the report of the specific application to the diseases in which they have been especially applied. The following outline classification has been given:

I. PROPHYLACTIC INJECTION.—(a) Active immunization; 1 inoculation of virulent organism in experimental work; 2 injection of attenuated virus or toxins; rabies, diphtheria, and tetanus; 3 injection of killed organisms; anthrax, swine plague, cholera, typhoid and plague; 4 injection of bacterial constituents; Koch's Tuberculum T. R. (b) Passive im-

munization; injection of antibacterial and antitoxic serums. (c) Mixed active and passive immunization; 1 simultaneous injection of an immune serum with the corresponding micro-organism killed or living: swine plague, erysipelas, rinderpest, experiment in typhoid, cholera and plague.

II—CURATIVE INJECTIONS.—(a) Active immunization: 1 injection of killed micro-organisms in small doses suggested by Fraenkel in the treatment of typhoid. (b) Passive immunization; 1 with antitoxic serums, diphtheria, tetanus snake bite, plague, tuberculosis, typhoid, streptococcus, etc.; 2 with antibacterial serums, typhoid, cholera, plague, dysentery, streptococcus, staphylococcus and pneumonia.

GENERAL APPLICATION.—The general principles concerned in this treatment then are: (1) Antitoxins; (2) bactericidal or antibactericidal serums; (3) vaccinations. The first two belong to the realm of direct serumtherapy, the third, to the indirect serum therapy. With infections there are two combinations possible, (1) an affinity of the toxin with the antitoxin; (2) an affinity of the toxin with the tissue cells. Work by Donits showed the rapidity of the union of the toxins with the cells. For instance if tetanus toxin was introduced first and four minutes later antitoxin injected, an excess of the antitoxin over the toxin was necessary to prevent the development of tetanus symptoms. Eight minutes after, six times the neutralizing dose; sixteen minutes after, twelve times, and one hour after, twenty-four times the neutralizing dose was required. A few hours later not enough antitoxin could be introduced to save the animal. Practical experience with diphtheria shows that the longer the disease lasts the larger the dose of antitoxin that is required for a cure. On the contrary only a neutralizing dose is necessary as a prophylactic measure. Two important principles have been involved in antitoxin therapy: (1) That of early administration; (2) sufficiency of the size of the doses. General factors for the success of serum therapy are the following: (1) Its concentration; (2) the freedom from contamination; (3) the time of administration; (4) the quantity injected; (5) the degree of affinity of the toxin for the antitoxin; (6) the degree of the affinity of the toxin to certain tissue cells; (7) the organ concerned in their recuperative power; (8) the excessive affinity of the toxin for the antitoxin, bacterial and antibacterial serum. The following factors are given for the low curative value of certain serums: (1) They are not antitoxic. (2) They cause the liberation of excessive endotoxins. (3) They are liable to produce exogenous complements. (4) The power of the tissues is not able to absorb complements of foreign serum. (5) The lack of suitable amount of complement in the human body. (6) The difficulty of obtaining suitable combining bodies for human complements. (7) The excess of the latter diverting the complement. (8) The inaccessibility of the micro-organisms in, e. g., typhoid, cholera.

TUBERCULOSIS.—This disease, as is its due, has received more consideration than any other disease along this line of the production of immunity and specific treatment. Koch in his original announcement regarding tuberculin in 1890, claimed the following properties for it: (1) Its power to produce a specific reaction in persons having tubercular lesions; (2) its curative value if administered over a certain period in suitable cases; (3) he limited its therapeutic value to incipient or afebrile cases. Francine,¹ maintained, that notwithstanding the storm of reaction following this assertion, Koch's tuberculin has come to be recognized as a remedy of great possible value, but even yet it should hardly be placed beyond the experimental stage. Osler, speaking before the British Congress on Tuberculosis in 1906 said: "In the wards of Johns Hopkins Hospital I have used tuberculin, very much as Prof. Koch advised. I can give willing testimony as to its commendable value in certain cases, particularly in obscure abdominal conditions, doubtful apex lesions, and in pleurisy. An important point is its harmlessness. I remember no case in which injurious results have followed the injection." Trudeau² from an extensive use of tuberculin recommends especially its administration in extremely small doses (1-10,000 to 1-20,000 mg.) at the beginning. He prefers the solid substance of bacillus emulsion (5 Mg.), or old tuberculin (1 cc.). He said that he was convinced that any danger lies principally if not wholly in a faulty and reckless administration of tuberculin. Farther than that he has formed the impression that tuberculin brings about somewhat better results than can be obtained by sanatorium methods alone. Ravenel tersely gives the great difficulty in the way of producing an anti-tuberculin serum, as that of the impossibility of obtaining the sum total of the toxins formed by the tubercle bacillus. In general all efforts have been directed towards the production of immunity after the methods of Pasteur—by attenuated culture; or by the use of toxins and products of the tubercle bacilli, or combinations of the two. The object is to bring about a true vaccination against the disease in some of the lower animals with a formation of anti-bodies in the blood. These anti-bodies then to be used by the injection into man to produce passive immunization or as a specific treatment for man.

The number of tuberculins has not been materially increased during the last year. Koch's old and new tuberculin and modifications of the same have been reported with varying degrees of success and failure. Beraneck³ made known a new tuberculin which differs from Koch's in several respects. This serum contains (1) extra cellular toxins T. B. (toxine bouillons); (2) intercellular toxines A. T. (acido-toxins). A combination of these two elements produces a product which is only slightly toxic but markedly bactericidal. Phillips, of Edinburgh, adds his confirmation to that of Beraneck, as to the value of this agent in the treatment and diagnosis of all forms of tuberculosis. Von Behring believes he has discovered what will prove to be a curative principle in the

treatment of tuberculosis. This specific has not yet been made public on account of his desire for fuller investigation of testing out experimentally, both pathologically and clinically, its value. He announced its name as that of "Toulase" at the International Congress of Tuberculosis at The Hague in August. He will not give his remedy to the profession until the fall of this year (1907). Marmorek's serum has been widely tested abroad and opinions are quite different as to its efficacy. The reports of Dieulafoy, Halloteau, and Lucas-Shampouniere in France are unfavorable to it, while other investigators, among whom may be mentioned Latham in England, Frey in Germany, Richer in Canada, reported favorably of it. Maraglino⁴ reported remarkable results in the use of his serum administered in various ways, directly into the foci of infection, also per mouth and rectum. The use of this method by Walsh, Stanton and Landis⁵ at Phipps Institute was not encouraging. They admit, however, that their trial of this serum was not confined to incipient cases without secondary infection. Ravenel said regarding this serum that Maraglino had undoubtedly proved his claim in regard to procuring a serum which protects experimental animals against the poisons of tubercle bacilli, so far as we have been able to obtain them, and also against the tubercle bacillus itself in pure culture when given in doses which do not overwhelm animals, but which have been shown to be fatal. Maraglino immunization against animals proves that they present special defensive material in their blood which can be transferred either to animal or man, causing passive immunization. These defensive powers consist of (1) anti-toxin, (2) agglutinins, and (3) bacteriolisms. They are obtained from the serum of the blood, and the extract of leucocytes of the immunized animal. He also claimed that the milk, meat and eggs of the immunized animals contain anti-bacillary properties and are indicated in the treatment of tuberculosis. He reports success in the treatment of processes of closed tuberculosis. In processes of the lungs the conditions are more complex because of the secondary infections, therefore this treatment is only partly specific. In general conditions, as of the pleura and peritoneum, the treatment depended upon the general resistance. The cures have been observed for 12 or 13 years. In many cases the results were remarkable and the treatment has been entirely harmless. His reports cover the statistics of this treatment on 20,000 patients from 1895 to 1905. Patterson⁶ used caseous material in the treatment of tuberculosis. He destroyed the living bacilli by the intermittent application of cold without changing the constituents of the solids. The final product, by special preparation, contained 5 mg. of solid substance to each cc. The injection of this material controlled by the opsonic index caused a rise of the tubercular opsonins without the usual decrease of these opsonins (negative phrase) following. After the administration there was usually a rapid rise of the opsonic index—from .5 to normal within 12 hours in one case.

He found the temperature a convenient guide to the dose. A rise of 1-2 to 1 degree gave the best results and maintained the index within normal limits. If there was no rise of temperature the index might be high and yet little improvement observed.

Hoffa⁷ used Marmorek's serum in the treatment of 40 surgical cases of tuberculosis. He found rectal injection the most convenient form and as effective as the other means of administration. His experience confirmed its harmlessness and its curative influence in this form of tuberculosis. Five to ten cc. were injected into the rectum daily, and the effect was promptly evident. In one case a fistula, which had resisted treatment for two years, closed after the third subcutaneous injection, but opened again after the serum was withdrawn. It was cured completely by fourteen rectal injections. Cheyne, by the use of Wright's methods, controlling the tuberculin injections by the use of opsonic index, reports cases of bone, joint and genitourinary tuberculosis which failed to give the expected satisfactory results. He views the position of tuberculin as a valuable adjunct to the treatment now in vogue, but is not prepared to abandon surgical measures when they are indicated. Brown reported three cases of tuberculosis of the bladder in which Koch's tuberculin tr. was used with success. Low⁸ indicates the use of Koch's new tuberculin in surgical cases when there is no evidence of reinoculation. Pogue,⁹ from the study of 167 cases drew the following conclusions: Tuberculin in small doses (.01 to .05 mg.) seems to have a more curative action than larger doses, without the danger of injurious effect. Through proper administration incipient cases improve rapidly under the use of small doses. Tuberculin should not be given to patients having a fever, in which case it will not benefit the mixed infections. Luedke¹⁰ said that clinical observation has not demonstrated the specific action of tuberculin. It does not cure directly but merely arrests or improves the process. Antituberculin cannot be extensively present when small amounts of tuberculin again induce a reaction after weeks and months of immunity. Rothschild reported 25 cases of tuberculosis treated with intravenous injections of Koch's tuberculin, in all of which the effect was encouraging. Compared with the hypodermic injection it produced a stronger reaction. No unfavorable results occurred. As high as 2 cc. was given at a time and the treatment continued from one to two months. Ganghoefer¹¹ detailed the treatment of 12 tubercular children under permanent treatment of Koch's old tuberculin. His impression was that tuberculin treatment in children bore great merit, and should be given an extensive trial.

Livitare treated animals with an aqueous extract of living tubercle bacilli. Their serum acquired anti-bacillary properties with little anti-toxic power. It agglutinated tubercle bacilli when diluted one to two thousand. In experiments with other animals in which living virulent tubercle bacilli were placed between the loops of the intestine, this serum

displayed marked curative power, preventing the development of experimental tuberculosis. The serum of tubercular patients failed to show any curative action. From Elsaesser's experience with the use of Koch's new tuberculin on 74 cases, he said that it was very efficient if administered during the early stages, while the infection is still purely tubercular. Even if its curative and immunizing action is not accepted it can be administered as a specific remedy against the fever. Krause maintained that, notwithstanding the warning to the contrary, fever is not a contraindication for tuberculin treatment for tuberculosis. Results justified the treatment which he gave patients in whom sanitarium treatment was impossible. He used Koch's bacilli emulsion in 1 per cent dilution in salt solution in doses ranging from .005 to 0.03 mg. Benefit was apparent in every instance. Griffith reported three cases which were unfavorable for tuberculin treatment, yet the treatment was of great value in two, and did no harm in the third. Delacamp, in a review of the present status of the treatment of tuberculosis, concluded that dietetic and hygienic measures stand in the foreground. He says none of the serums yet made have won a place in therapeutics.

The serodiagnosis of tuberculosis is not thoroughly established. Kinghorn and Twitchell, from an investigation of this subject, concluded that serum diagnosis of tuberculosis, especially the early diagnosis, is of no value. Jessen found that, in 86 out of 222 patients who had been living in the mountains, the agglutinating power of the blood serum was increased. Patients treated with tuberculin failed to show increased agglutination.

Wright's claim for the value of the opsonins as a diagnostic means is that a low (below .75) or high (above 1.2) tuberculo-opsonic index indicates either the presence of a tubercular lesion or a marked predisposition for tuberculosis. Ross, after an extended experience with the opsonic index as a means of diagnosing pulmonary tuberculosis said the result is very satisfactory. In differential diagnosis of the chronic form of pulmonary tuberculosis from chronic bronchitis, emphysema, bronchiectasis and malignant disease of the lungs he has used this method with success. He believed that the tuberculo-opsonic index will eventually prove of material assistance in the diagnosis of early tuberculosis. Cheyne from his experience with the opsonic index as a control for treatment of surgical tuberculosis, said that the result depends on the personal equation of the examiner, and that it has not the strict mathematical accuracy that one could desire. Another difficulty is the cumbersomeness of the method which makes it impracticable for the busy physician.

Bandelier's experiments confirm the results of Koch's technic for the use of tuberculin for diagnosis. He affirms that it is only the maximum dose of 10 mg. which gives a reliable reaction. Kemp, Bossi, Meyer and Biernbaum have used the tuberculin test as a diagnostic factor in indefinite

conditions of the female genital system. Lorenz¹² relates his experience with a number of tubercular patients who were given a sham injection of tuberculin. His table shows that in 44 out of the 200 patients given sham injections there was a rise of temperature. He suggests it might be wise to test the influence of suggestion in this way before really injecting tuberculin. A rise of .5° C. can be accepted as a positive reaction to tuberculin if this is computed from the temperature noted due to suggestion. In some of the cases, the patients who had the most pronounced rise of temperature after sham injections failed to show any rise when tuberculin was really injected. Another fact noticed was that the suggestive reaction was more pronounced when the organism was depressed.

Vaccination, as considered in the limited sense, has been attempted in tuberculosis extensively during the past year. It has been the underlying principle of a number of the tuberculins used in the past. This method has received impetus by A. E. Wright's application of the production of opsonins in the blood to control the inoculation and regulate its dose. Wright reports favorably on this method of treatment in a large number of even advanced cases of localized tuberculosis and other infections. Gray has successfully employed the vaccine treatment according to the method advocated by Wright in the treatment of tubercular glands, joint affections, tenosynovitis, psoas abscesses, peritonitis, genito-urinary tuberculosis and tubercular disease of the upper air passages. Presse¹³ reported the findings of the vaccination of calves according to Von Behring's method. Calves which have been vaccinated and then placed in an infected stable failed to contract tuberculosis. The marked contrast between the advanced diffused lesions of the non inoculated and circumscribed relics of the inoculations in the animals inoculated was most striking. Bungern¹⁴ in inoculating monkeys with tuberculosis could observe no difference in the effect of human and bovine bacilli, and the facts of the reaction of the serum corroborated the danger of man to bovine, as well as human tuberculosis. Raw¹⁵ reiterated his previously expressed views that human and bovine tuberculosis are distinct varieties of the same disease, and that man is susceptible to both, especially to bovine tuberculosis in the milk-drinking period of life. He collected the blood of animals cured from tuberculosis for the purpose of using the serum after careful preparation, to vaccinate children whose parents died of phthisis, with a view of protecting them from that disease. Along this line Maraglino vaccinated children with ordinary tubercle bacilli, killed before inoculation. This is done in the arm at three points, with the result of the production of small indurated postules, with a slight rise of temperature and a swelling of regional glands, all of which symptoms subsided in two or three days. He said his work in this line has given satisfactory results, the children all presented defensive substances

in the blood, and their general condition remained good as long as observed. He claimed (1) it is possible to produce a specific therapy for tuberculosis; (2) it is possible to immunize animals against tuberculosis, and (3) that there is good reason to hope for an anti-tuberculous vaccination for man.

DIPHTHERIA.—The use of this established serum continues to show its specific prophylactic and curative results. The progress made with it concerns: (1) Its modification—as concentration and elimination of contaminating substance; (2) its administration, intravenously, by mouth and per rectum; (3) its empirical uses for other diseases, as erysipelas, scarlatina and Graves' disease; (4) an important development as to its contra-indications—status lymphaticus.

Gibson working in the health department laboratory of New York City has perfected a method by which the dose has been reduced one-half. This concentration of the serum has proven a benefit, reducing pressure necrosis abscess at the seat of inoculation, and the skin eruption and joint conditions which are supposed to be due to percipitins present in the unrefined serum. The marked prophylactic action of the serum is demonstrated by the arrest of an epidemic of diphtheria in a Norwegian town, reported by Maag.¹⁶ Out of 423 persons immunized, only three developed diphtheria later and this not until 35 to 65 days. In some cases the parents who had not been injected developed diphtheria, while all the children who had been injected, escaped. The immunity conferred lasted about five weeks. Intravenous injections of diphtheria serum have been used extensively by Visson.¹⁷ He gave as high as 110,000 units. Comparing his mortality of the subcutaneous, 13 per cent, and intravenous, 16 per cent, it is noted that the latter is high, but he says this is due to the fact that all severe cases were chosen for this method. Ohlmacher, in writing on status lymphaticus, said that this is probably the cause of death which followed the injection of anti-diphtheria serum in a number of cases. This counter-indication for its administration must always be considered and excluded before the serum is administered. Wilbur¹⁸ reported a peculiar case of rash following antitoxin, accompanied by other alarming symptoms such as oedema of the lips, tongue and eyelids, and marked dyspnea. The pulse became imperceptible, although the apex beat was vigorous. The condition grew gradually worse but eventually subsided under stimulating treatment. Lopez¹⁹ said that early curative doses of this antitoxin administered in scarlatina curtailed suffering and lessened risk to the patients. He also found this serum equally effective in all anginas, tonsillitis and quinsy. He said it neutralized the toxins, reduced the fever and delayed local congestion. He maintained that the extreme large doses of 100,000 units indicated in some cases are without an element of danger. Mastri²⁰ reported three cases of erysipelas which seemed to be cut short, or were favorably influenced, by two injections of this serum. He used 400 units in children and 1,000 in adults.

TETANUS.—Although the prophylactic serum treatment of this disease continues to be more firmly established, little has been done and few favorable reports recorded on the satisfactory active treatments after the symptoms of tetanus were present. Intravenous and subdural administrations have not proven to have great advantage over the subcutaneous method. The application of dried serum locally has been reported with favor. Large and continuous doses given after the development of symptoms of tetanus have saved a few protracted cases.

Wolff and Eisner²¹ have obtained by Burgell's method a tetanus toxin which contained very slight toxicity and was well tolerated by animals. Research resulted in proving that it has no death-dealing properties, while it still retained unimpaired its contracting principle. Animals treated with the toxin afterwards became immunized to a certain extent, although they showed a marked susceptibility to tonic contractions stimulated by certain sounds. They are attempting through these experiments to introduce an improved serum. Scherck's²² widely quoted statistics as to its prophylactic efficiency, bears out the early claims for this serum as a certain preventive measure. He tabulated 291 cases of which 190 were 4th of July injuries of 1906, having prophylactic treatment of antitetanus serum, without a single case of tetanus. Compared with the results of the same injuries of 1903, without the use of the serum given in advance as a prophylactic measure, when 1-3 of the cases succumbed to tetanus, the result is remarkable. Bergola²³ related good results with 30 cases given prophylactic injections, and two cases with developed tetanus. He stated that the action of the serum is especially pronounced in protracted cases. The intracerebral or intravenous method did not appear to have any advantage over the subcutaneous administration. He said that from 1887 to 1902 an average of 750 cases died annually of tetanus in Italy. During the later years, of the 1800 patients he had encountered, the above mentioned had only developed tetanus, and they had developed it before this serum was injected. Kinoium²⁴ reported favorably on the application of tetanus antitoxin as a dressing for wounds with a view of preventing tetanus. They healed more rapidly and with less disturbance than those treated in the ordinary way. Vaccination, furuncle, and a wound of the nose after an operation are cited as instances. He concluded that the results show that dry serum possesses other than its specific antitoxin, and this must be in the nature of the immune bodies. Engelmann reported the recovery of a case after 5 days of symptoms on the use of intraspinal doses of 60 to 80 cc. daily. Cooley²⁵ said he believed the mortality of this disease to be due to the perfunctory treatment on the part of the attending physician. He advised the free use of the serum subcutaneously and intravenously in from 50 to 70 cc. daily.

STREPTOCOCCUS SERUM.—The reports on this serum do not lead to more positive conclusions regarding its value. This group of organisms con-

tains endo-toxins but form neither anti-toxins nor bactericidal serums. Their curative value is very low in experimental work, failing totally if injected a few hours after the injection of the micro-organisms. Clinically they are recognized as failures, but developments of the last year have brought forth a few instances of their use as prophylactic agents. This new application may prove to be of value.

In an anti-streptolytic serum reported upon by Bottenger and Brown²⁶ (from its use in 20 cases) they have an agent which is not antitoxic in its action, but bactericidal for streptococci. Severe reactions followed the use of this serum in subcutaneous injection of 10 to 20 cc. Rectal administration did not produce bad results. They concluded that it produced general improvement in cases of advanced tuberculosis presenting the finding of the mixed infection, in all instances. In the cases where no acute symptoms were present it seemed to exert a favorable influence on the course of the disease sufficiently often to suggest the presence of streptococcus in tuberculous processes even in many cases when there are no signs of mixed infection.

Barney²⁷ reported good results from the use of this serum in tuberculosis complicated by secondary infections. He says the reaction may take place from 12 hours to 6 weeks. He usually gave four or five doses subcutaneously at intervals of 1 to 2 days. He has used the remedy by rectum for 10 or 12 doses before resorting to his hypodermic use. He has seen unquestionably good results attend its use even when streptococci were not found in the sputum. He believes that the clinical evidence affords a basis for its use.

Fromme²⁸ reported good results from the prophylactic injection of 10 cc. of anti-streptococcus three or four hours before undertaking an important abdominal or vaginal operation. He used it with advantage in 21 cases. In several other cases in which he used it as an active therapeutic agent the results were less beneficial. He said that little can be hoped for in pyemia, septicemia and chronic processes; in fact, powerful reaction in these conditions will do more harm than good. Powers²⁹ concluded that the serum has failed to gain a place in surgery. Raw³⁰ has used the serum in more than 200 cases of various kinds of septic infection, including malignant endocarditis. He said that purely streptococcus serum is of great value, especially when administered directly. He used the polyvalent serum as follows: Bowels are freely cleared by aperients, the rectum gently washed out with saline solution, and the following formula injected into the rectum a. m. and p. m., or whenever necessary:

Antistreptococci serum	20.
Normal salts solution 100° F.....	40.

PNEUMONIA.—Neither serum nor vaccination treatment are recognized of value for this disease. MacFayden³¹ succeeded in extracting litheral toxin from the body of virulent pneumococci, and is now carrying on a series of immunizing experiments with a view of procuring an antitoxic serum. Welsch³² concluded that the dynamic effect of pneumonia serum is so slight as to seem of no importance to the toxemia, and the pneumonia sepsis remains apparently unaltered by the use of this serum. Rosenow³³ said that the serum of normal or pneumonic individuals has no bactericidal effect whatever on pneumonia, yet there must be an antitoxin formed, for the healing and crisis of pneumonia do not solely depend on phagocytosis.

SCARLATINA.—Moser's scarlatina serum which was reported upon favorably by results from Eschricks clinic in Vienna has not had definite confirmation. This serum is prepared by the inoculation into animals of the cultures made from the right auricle of patients who have died from scarlatina. The use of antidiphtheritic serum for scarlatina has been mentioned. In regard to this, Nacrides³⁴ says that antidiphtheritic serum is not indicated and it may do harm as it tends to interfere with the function of the kidneys, thereby increasing the susceptibility to nephritis.

DYSENTERY.—Some very favorable reports have been communicated on the serum treatment of this disease in those cases in which the specific organisms could be absolutely isolated. Balliard and Dopter³⁵ stated that the serum of the horse immunized against the bacillus of dysentery possessed microbial and antitoxic properties which render it useful in therapy. It is entirely harmless for man and has proven almost specific in the treatment of bacillary dysentery. It had no effect upon other varieties of dysentery. The results were practically constant in 96 cases treated. The dose ranged from 20 to 100 cc. repeated once or twice every 24 hours. The Shigi-Krause bacillus was inoculated into horses. The serum derived from these animals proved equally efficient against the Flexner bacillus dysentery.

TYPHOID.—The preparation of an efficient antityphoid serum remains questionable. MacFayden³⁶ gives the results of the immunization of the goat with the cell juices of the bacillus typhosus. Virulent bacilli directly from the peritoneal cavity of the guinea pig were cultivated on nutrient agar. By a detailed process the juices were separated from the cells. The serum was toxic on intravenous injections to goats and rabbits. Large doses were fatal, but small doses gradually increased and duly spaced proved successful in creating a tolerance of the animal to otherwise fatal doses of typhoid antitoxin. By this method they attempted and think they have succeeded in producing experimentally, active immunity against typhoid. Rossi,³⁷ from his study of the immunizing antibodies in the serum of eight typhoids was unable to detect any close connection between the agglutins and the anti-bodies of typhoid. There are few reports in the literature concerning the serum treatment of this

disease. Among the most noted are the following: Chanpemesse³⁸ showed by tables the average mortality of typhoid in the hospitals of Paris for five years, in 3,595 cases as 17.3 per cent. In the hospital, Bastion, in 712 typhoids treated with antityphoid serum the mortality was 3.7 per cent. Of the unfavorable cases death was due to the complication of perforation, pneumonia, gangrene of the mouth, rupture of aneurism, cancer of the kidney and gangrenous pleurisy. Hemorrhage did not cause a death. The only treatment used, with the exception of the serum, was calcium chloride. In the nine perforations, the serum was instituted late in the course. This never occurred in those cases in which the serum was given in the first week. All the patients having the serum the first week recovered, without exception. Bruanan³⁹ reported the results of the use of antityphoid serum in 100 children from 3 to 16 years old. Mortality in his service with other methods was 17 per cent, but under the serum treatment it dropped to 3 per cent. In the fatal cases the serum treatment had not been applied until late. He said it had an unmistakably favorable action on the disease. Josias, speaking from his experience with 182 cases of typhoid in children in which the serum was used, said he was convinced that the outlook for a typhoid patient was much better when the serum was injected as an adjuvant to the usual measures. His mortality was about the same as Bruanan's—3 per cent. He confirmed its harmlessness.

Britt⁴⁰ suggested that .02 cc. culture of 10,000,000 typhoid bacilli should be used as the dose for a therapeutic vaccination of typhoid. The amount should be gauged so as to produce as few constitutional and local symptoms as possible, and also controlled by the opsonic index. No cases were reported. Clarke,⁴¹ from the study of 33 cases of typhoid, gave the following conclusions regarding the typho-opsonic index. A rise in the index occurs during a typhoid infection. It varies from day to day. It is high early in the disease, decreases with a falling temperature, and rises with convalescence. It resists a temperature of 30 degrees for 30 minutes; for this reason one can heat to 50 degrees C. in order to destroy the effect of the serum. As it appeared early it seemed likely that it would prove valuable in diagnosis.

EXOPHTHALMIC GOITER.—This has been one of the newer ventures of the more modern therapy. Thyroidectin has been used with some success in the treatment of this disease. Beebe and Rogers⁴² conjointly worked out a serum which they believe will ultimately prove of great value in the treatment of this disease. They now designate two kinds of serum, according to the kind of glands inoculated, viz: (1) Normal serum obtained by inoculating animals with the combined nucleo-proteids and thyroglobins separated from the normal thyroid gland; (2) pathological serum, obtained by inoculating the combined nucleo-proteids and thyroglobins of the pathologic or exophthalmic thyroid. They found the

large grey male buck of the Belgian hare species could be relied upon to give the most uniform serum. The serum is standardized by agglutinating reaction showing its cytotoxic activity. They reported 90 cases under treatment of which 23 have been cured of all symptoms; 52 improved; 11 still in doubt, and 4 fatalities. Beebe's conclusions were as follows: "The serum is an agent of considerable value. Only a small percentage of the cases treated were acute. The statistics include all cases treated, and the number of instances of improvement are so large that they cannot be ascribed to coincidence. Under favorable conditions much can be accomplished by careful serum therapy." Waterman⁴³ obtained from the serum treatment of 5 cases of Graves' disease, 2 cured, 2 improved and 1 unimproved. Heince⁴⁴ reported unsatisfactory results in the treatment of 6 cases of Graves' disease, with the serum of thyroidectomized goats.

Elsner Weisman⁴⁵ presented the preliminary report of the study of the therapeutic action of antithyroidin in the treatment of ophthalmic goiter. In all their cases this served to relieve one or more of the symptoms, and they were rewarded by cures in a number of cases. They said that this therapy is entirely harmless and in no case have they had occasion to regret the trial of antithyroidin. Their method was to administer the serum night and morning in doses of from 15 to 30 cc. in raspberry syrup, water, or mixture of orange. After its administration for several weeks, it was discontinued for a day or two at a time. Prolonged treatment is necessary in some cases.

SYPHILIS.—Next to tuberculosis, this disease has received more attention from the point of view of its diagnosis and treatment by means of a serum. The experiments of student Maisonneuve, who inoculated himself with syphilitic virus and then treated himself with calomel-lanolin (33 to 25 per cent), after the method which has been proven experimentally by Metchnikoff and Oroux to be effective on monkeys, must be credited equal to those of Hunter. This student has been absolutely free from any sign of syphilis one year after the date of inoculation. Another experiment on man is reported in the communication of these men,⁴⁶ which goes to prove the attenuation of the virus when it is passed through monkeys. A year ago an assistant contracted a specific ulcer on the lip from the inoculated monkeys, which, when re-inoculated in the monkey developed typical syphilitic lesions with a number of spirochetes. Inoculation of anthropoid apes was negative, which confirms the accepted evidence that the passage of human virus through the lower monkeys attenuates its virulency so that it fails to produce typical signs when injected into man or higher monkeys. The assistant has been kept under close observation by Fournier, but no indications for syphilitic treatment have presented themselves. Another man 79 years old, free from syphilis, allowed himself to be inoculated with virus from a human chancre after five passages through the monkey organism. Two minute papules developed at the site

of inoculation but soon subsided. No other signs of syphilis have developed during the course of the year. Rossi and Cipollina⁴⁷ reported their total experience with the serum treatment of 50 cases. They gave detailed reports of a case of osteoperiostitis of the skull which has resisted other specific treatment, as cured, and also cases of early tabes in which this treatment relieved the lancinating pain and benefitted the general condition.

The sero-diagnosis of syphilis is merely mentioned because of the interesting work done along this line within the past year. Wassermann and Paulet,⁴⁸ for instance, reported on the biologic test in 41 cases of general paresis, in 30 of which the cerebro-spinal fluid when mixed with an extract of liver and spleen of syphilitic fetuses, resulted in an unmistakable arrest of the hemolysis. These tests were negative in non-syphilitic patients. They think the test demonstrates the presence of specific anti-substances in the spinal fluid in the majority of paralytics.

CEREBROSPINAL MENINGITIS.—While the production of the serum for this disease has not been accomplished, the experimental research of the past year went far towards perfecting methods for its development. Flexner⁴⁹ first succeeded in producing cerebro-spinal meningitis in monkeys, then an antiserum was produced by the inoculation of rabbits, goats and large monkeys. His conclusions regarding these experiments are as follows: "In how far the results obtained on guinea pigs and monkeys can be applied to the prevention and the treatment of cerebro-spinal meningitis in man, is not safe to predict. Should further experiments show that the serum can modify favorably the disease in monkeys the case would not be without hope. I do not think that the injection into the spinal column of man of the alien serum should be undertaken until the physiological action has been worked out in detail in monkeys." Jochmann⁵⁰ succeeded in producing a serum which he claims gave good results in 17 cases of cerebro-spinal meningitis. The injections were made subcutaneously and by lumbar puncture, and their harmlessness apparently established. Wassermann and Kole⁵¹ have obtained a serum from the inoculation of horses from which they claim to have derived specific action in various ways. Their findings were controlled by the hemolytic test, and are constant and conclusive. They do not hesitate to advise its use in treatment and prophylaxis, in doses of 10 cc. as early as possible. This dose has proved harmless in animals.

HYDROPHOBIA.—The past year, as borne out by various statistics, has further established the action of Pasteur's treatment as an almost absolutely certain prophylactic measure for this disease. No active immunization has proved successful in this disease. Pampoukis and Remlinge⁵² said that the paralysis which has been present in a few cases is due to the rabbit toxin in the emulsion which has a similar action to the diphtheric toxin in inducing paralysis.

CHOLERA, PLAGUE AND PERTUSSIS.—MacFayden⁵³ conducted experiments that show (1) that acutely toxic cellular products possessing active immunizing substances can be obtained from the cholera organism by the methods employed; (2) that an antibody can be produced from that primary poison; (3) that the antitoxic power of the serum can be raised to a marked degree; (4) that the serum has antitoxic, agglutinating and antibacterial properties; (5) that there is an intimate relationship between its virulence and toxicity; (6) that the antitoxin is readily destroyed from 50-60 C. Vaccination treatment for this disease is expected to come from the establishment of these precepts. Kolle⁵⁴ reported successful results from inoculation of 42 men with culture of living Plague bacilli, which had been attenuated in a temperature of 42-43 C. After these protective inoculations the men were kept under observation for four months and the method was fully established as being absolutely harmless. The experiments conducted by Lamb and Foster⁵⁵ show that the normal mammalian serum is devoid of any bacterial action on the bacillus pestis. Bordett and Gengou⁵⁶ reported the discovery of specific bacillus of pertussis. This was agglutinated by the blood of convalescent patients and not by the blood of patients having had whooping cough. Experiments in the line of an effective serum of active immunization are under way.

ANEMIA.—Nommsa's⁵⁷ experiments with four cases treated with prepared anti-anemic serum were not promising. Although the treatment caused transient increase in the number of figured elements in the blood, no permanent results were apparent. Foa,⁵⁸ on the research of the effect of vaccine cytotoxic serum on the blood forming organs was impressed by the variation in the reaction by different species of animals. Among the most interesting results he records the mononuclear activity displayed by certain hemolytic leucotoxic serums and the prevailing lymphocytic character assumed by the spleen and bone marrow under the action of splenotoxic serum.

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GENITO-URINARY SURGERY.

IN CHARGE OF

H. McC. JOHNSON, M. D.

Recognizing the difficulty attendant upon demonstrating the tubercle bacillus in urine, Columbino¹ has endeavored to find additional means to enable us to find it. He has observed that the white globules of the urinary sediment in tuberculous conditions, present a characteristic appearance. As observed in the unstained specimen under the microscope, the leucocyte is elongated, polyhedral and crenated, the contour being irregular. Sometimes we will observe at the periphery little balls of protoplasm, which seem inclined to detach themselves from the leucocyte, the element seemingly having been fractured. If we find leucocytes thus deformed, mixed with red blood cells, we may say that it is a question of tuberculosis.

If now the specimen is fixed and stained, we will observe that the protoplasm of certain polynuclear corpuscles is reduced about the nucleus. We may even find nuclei almost free. A quite striking characteristic is the occurrence of multiple vacuoles in the protoplasm, the nucleus responding less energetically to reagents.

In affections other than tubercular, the form of the leucocyte is normal, the contour regular, and they color as those in normal blood. The examination of the fresh specimen is more satisfactory than those of the stained, because of the possibilities of artefacts.

In those cases of primary tuberculous kidney in women, in which the cardinal symptoms are absent, and in which the disease is more or less latent, the cystoscopic view, according to Fenwick², will lead to proper conclusions.

Special attention is called to the fact that a displaced, retracted ureteric orifice, and a bladder only slightly eroded, mean a tuberculous kidney; and that, furthermore, the location of the disease in the kidney can be accurately determined, if there is an absence of other infection.

There will be found dense adhesions at the upper and lower poles of the kidney, the ureter thickened and the upper and lower calices eroded by tuberculous ulceration.

The retracted, displaced ureteric orifice points to a thickened ureter, shortening lengthwise. This involves narrowing and obstruction of the channel, with back pressure of the urine upon the thickened and yielding pelvis, and a tough renal parenchyma. The back pressure of the pelvis invariably means that the upper and lower calices will suffer, and that consequently the stress of the tuberculosis must fall chiefly on these areas thus traumatized.

A retracted ureter always means a thickened lead-pencil-sized ureter,

which can be felt *per vaginam*; but a thickened ureter is not always a retracted ureter, neither does it always mean tuberculosis. It is the extreme shortening and retraction of the ureter and of the orifice which seems characteristic of this particular type of renal tuberculosis.

Bevan³ tells us that tuberculosis of the genito-urinary tract, with few exceptions, begins in the kidney, prostate, epididymis or tubes, and that it is primary in these only in the sense that in the individual affected, they are the foreshadowing and important foci of the disease. They are strictly secondary to a small, unimportant focus in the lymphatic glands, bones or lungs, the infection occurring through the blood.

Renal tuberculosis can and does undoubtedly run at times a silent course, without giving rise to any symptoms, even when a single kidney has been entirely destroyed; yet by attention to the symptoms, and by the use of important modern methods of diagnosis, we can generally arrive at a correct conclusion. If the disease is limited to one kidney, nephrectomy is the only operation to be considered. Nephrotomy with drainage should be used simply as a palliative operation, and resection of the kidney should be practically discarded from consideration.

When operating for kidney tuberculosis, it is unnecessary to remove the diseased ureter, as it gradually recovers after the removal of the primary foci in the kidney proper.

There are no more satisfactory results in the whole field of surgery than those which are obtained by an early nephrectomy in unilateral kidney tuberculosis.

We are informed by Whitacre⁴ that while genital and kidney tuberculosis may occur simultaneously and consecutively from hæmatogenous infection, yet the ascending infection is not an important factor. In a number of cases, the lesion in the kidney is unilateral, while the opposite kidney remains free from tuberculosis infection for a long time. The clinical course is towards progressive extension to other parts of the kidney and body.

According to Garceau,⁵ early cases of tuberculosis of the urinary tract in women are best treated by a change of climate and attention to the requisite amount of fresh air, nourishment, etc., cures having been recorded by these means.

Again, the very advanced cases of urinary tuberculosis, in which the whole urinary tract has been invaded, and both kidneys are diseased, demand a purely hygienic course of treatment.

Topical applications in cases of vesical tuberculosis, in which the urinary tubercles have not yet appeared (the only abnormality being, as seen by the cystoscope, collections of bright red patches), are intolerably painful, and can do no good, for the reason that they do not reach the site of the trouble, the germs being imbedded in the tissues.

In the second stage, that of tubercle formation, with attendant caseation

and ulcer formation, a vast amount of good can be accomplished by local applications, such as corrosive sublimate and nitrate of silver, it sometimes requiring months before any decided improvement is noticed.

In a case of primary tuberculosis of the bladder, Kreissl⁶ obtained a cure by local treatment. It consisted of applications of 5 per cent iodoform guaiacol suspensions, alternating with bichloride solutions to the bladder and the lower segment of the ureter. The subjective symptoms improved rapidly, and the ulcers healed within a month, the tubercles disappearing within two months.

Considering the damage inflicted upon the kidney structure by increased tension within the capsule, and by continued traction of a thickened capsule, Harrison⁷ believes that surgical intervention for the purpose of relieving tension, is indicated in some forms of nephritis. It is called for where there are progressive signs of kidney deterioration, as shown by the persistence or increase of albumen when it should be disappearing from the urine. It is called for where there is suppression of urine or approach to this state; also where marked disturbance of the heart and circulatory system occurs in the course of inflammatory renal disorders. It is not absolutely material to the issue which kidney is selected for operation, unless there is something to indicate it, as relief of one aids the other.

The pathogenetic theory of eclampsia, according to Pousson and Chambrelent,⁸ generally accepted today, is that of the blood intoxication with poison, the original nature of which is still undetermined. There is added to this toxemia lesions of the liver and kidneys, i. e., the two most power emunctories of the organism. Acting on this theory, the treatment consists in the employment of proper means to obtain purgation of the blood. The means usually employed, consisting of milk-diet, water in quantities, hypodermoclysis, etc., combats the toxemia, but neglects the lesions of the liver and kidneys, or attacks them only indirectly.

Chloride of soda is today considered harmful in uremic states, and as water elevates the blood tension in the vessels of the kidney, as well as those of other organs, it tends rather to aggravate the lesions by reason of the increased work that it places upon all the anatomic elements, and especially the epithelium.

In order to aid the ordinary means of blood-purgation, and to put an end to nephritic lesions, surgical intervention has been suggested, not to be substituted for the medical treatment, but to be recommended as a new resource added to those we already possess. In grave intoxications which have resisted medical means, surgical intervention is justifiable, and becomes advisable when there is acute nephritis. The authors regard renal decapsulation highly, but believe they have added much to the operation by employing with it an incision of the kidney, a nephrotomy. They suggest that besides the relief of tension, the abundant flow of blood that is ob-

tained by the incision itself relieves congestion of the kidney, modifies diapedesis, and favors the out-flow of the exudates and detached epithelia encountered in the canaliculi intersected by the incision. This action may be kept up for days if a drain is put in, as this permits the altered liquid secreted by the kidney to flow outward, and renders possible antiseptic lavage.

Sagols⁹ has collected seven cases, recently reported, in which, during operation, the vena cava was injured, and the vessel either sutured or ligated, out of which number four recovered and were cured. Hitherto, experimentation has absolutely rejected ligature of the inferior vena cava. In experimenting upon dogs, Purpura found that sudden ligature of the vena cava resulted in death, while slow ligature resulted in recovery of the animals, by giving time for the supplementary circulation to become established. In the three cases of total ligature of the vena cava reported as cured, the surgeons were dealing with conditions which caused gradual pressure on the vena cava, thus developing the collateral circulation gradually.

In man, anastomosis between the portal circulation and that of the vena cava will be sufficient to assure the return of the blood to the heart, after obliteration of the vessel.

In the female, the uterine and ovarian venous channels are of great importance in carrying on the collateral circulation.

From this we may conclude that there are two satisfactory methods of treatment of injury of vena cava, namely, suture and total ligature, the latter being easier of execution, and should be employed in cases of wounds of inferior vena cava, when the vessel is injured below the point of entrance to the renal veins; but when the opening occurs at the entrance of the renal vein, or above it, ligature is absolutely contraindicated.

Jungano¹⁰ finds that it is good surgical practice to do nephrectomy in cases of wound of the renal vein, rather than ligature. It is better to preserve the organism from the dangers produced by the presence of an organ undergoing degeneration than to hope for the possibility of preserving it either through the normal or abnormal collateral circulation.

Carstens¹¹ is satisfied that a movable kidney can be permanently fixed by proper technique; and that many disturbances of digestion are caused by movable kidney. Fixation relieves some of the digestive disturbances, and many of the nervous symptoms; but it cannot be expected to relieve symptoms not dependent upon the mobility of the kidney, but due to some other organic disease; so that great care should be employed to differentiate which are due to the kidney mobility.

A proper fixation will relieve the nephritis in the organ. Fixing a floating kidney does not mean that you get it into the exact position

where it was, and should be, but by fixing it high, and as near to the original site as possible, you prevent it from pulling on, or irritating other organs and the solar plexus of nerves, and you prevent a kinking or twisting of the ureter. The mortality has been nothing in 32 cases.

Da Costa¹² tells us that in many cases of movable kidney it is unwise to operate until the use of a properly applied corset is relied upon to keep the patient comfortable and safe. But in those cases of progressive mobility, where there are distinct local symptoms, operation is indicated. He uses gauze in the usual way to keep the kidney in place, with the exception that he stitches two ends of the gauze together with catgut, so that as the catgut is absorbed, the gauze may be more easily removed.

Carrieré¹³ reports eight cases of lumbar puncture for nervous uremia, in four of which the results were absolutely negative, while in the other four they were favorable. He regards lumbar puncture, associated with the usual medications for nervous uremia, as encouraging when the subjects are young, in cases of acute nephritis, and where the uremia has existed for only a short time.

From microscopic examination of the brain tissue removed post-mortem in uremic cases, the author finds marked changes in the tissues, such as fragmentation of the nuclei and vacuolation of the cells, from which it is evident that while the blood may be overcharged with toxic substances, yet the accidents of nervous uremia are largely due to the hypertoxia of the cephalorachidian fluid; and this hypertoxia he has demonstrated through animal injection.

There are cases, however, in which the exciting cause of the uremia is cerebral edema; others in which it seems to be due to compression by the cephalorachidian fluid; and others still in which the hypertoxicity of this liquid cannot be doubted.

Therefore, lumbar puncture seems to be applicable in these cases, whatever the exciting cause.

We learn from Carl Beck¹⁴ that a definite diagnosis in suspected lithiasis can be made by means of the skiagraph. Any errors made are of the individual, not of the method. In this work, it is of importance to bring the calculus area as near to the plate as possible, and to make use of a tubular diaphragm, which permits the passage of the focal rays alone. The disadvantage of the tubular diaphragm is that only small areas can be shown at a time. It is evident, therefore, that in a skiagraph of the urinary tract, a general exposure must precede that of the limited area, since it cannot be known beforehand whether the suspected calculi are situated in one or both kidneys, or in the ureters. His experience with the Roentgen method has suggested to him that it is invariably necessary to skiagraph the renal regions whenever vesical calculus is suspected.

Since he has adopted this principle, he has found renal calculi to be present, also, whenever there was a concretion in the bladder.

Deaver¹⁶ says since accurate methods of making a diagnosis in urinary surgery have been in vogue, the frequency with which renal calculi are met with has become very widely appreciated. If in the ureter, the point that chiefly concerns us is to determine at what point it is arrested. The two most valuable aids to the diagnosis are tenderness at the site of impaction and information gained by a technically perfect skiagraph.

While he regards the x-ray as of much value in locating stones, he cautions us not to forget the rule of surgery in doubtful cases, to first explore the kidney through the loin, and then to pass a sound down the ureter before concluding the operation. A skiagraph to be of value must throw a shadow of tissues less dense than the least dense calculus; and it is necessary to see the shadows of the psoas muscle, to make sure that no calculus is present.

It seems to the author that the dangers which may ensue from neglect of ureteral calculus are greater than those which attend its removal by operation, even though the calculi produce no symptoms.

It is advised by Lillenthal¹⁶ that great care should be used in reading the skiagraphs made for renal calculus, as other opaque bodies in the same locality, such as a calcified lymph nodule, sesamoid bone, a lime-plate in the iliac artery, or even a foreign body in the contents of the rectum, may be misleading.

Some use may be made of the cystoscope, phonophore, wax-tipped catheter, and observation of the ureteral orifices, in conjunction with the ordinary symptoms of calculus. He considers pain, or hemorrhage, or both, as indications for operation, and believes the usual abdominal incision for extra-peritoneal exposure of the ureter, the preferable route.

Beer¹⁷ speaks very highly of the indigo-carmin test as an aid to the diagnosis of ureteral occlusions, citing several cases in which, though the ureter seemed by catheterization to be occluded, yet the indigo-carmin test showed them to be patent; and while neither ureteral catheterization nor the indigo-carmin test alone are adequate to diagnose occlusions of the ureter, yet, used together, we have a very satisfactory method of determining the presence or absence of a ureteral obstruction, as well as the degree of patency of the ureter.

Cumstor¹⁸ considers anuria, and especially that in connection with renal calculus, saying that this is the most frequent cause of it, and that it should always be borne in mind that the diagnosis of these cases can ordinarily be made from the history, because the patients generally have been previously troubled by urinary symptoms. Colicky pains usually precede the passage of a stone, but every symptom may be lacking, the anuria suddenly developing without warning.

The possibility of both ureters being obstructed should not be over-

looked. In this case, it is most important to determine the kidney last affected, which is usually the one that was the seat of the last pain, is the most tender on palpation, and over which the abdominal walls present the greatest reflex rigidity, and should be the one selected for operation. nephrotomy should be performed early.

Deschamps¹⁹ has found that antipyrin in 5 per cent. to 10 per cent. emulsion introduced into the bladder is of signal service in arresting hemorrhage from the bladder in prostatics.

According to Meyer, the Bottini operation is now generally recognized as having strict indication in the treatment of prostatic hypertrophy. Its encouraging results are especially noticeable in those cases where operation with the knife would in all probability have caused the death of the patient. Especially is it indicated in those cases where other organic diseases make it appear imprudent to undertake prostatectomy, or where this operation is absolutely refused; and in considering the mortality from the Bottini operation, it must be remembered that in many cases in which the Bottini operation is done, prostatectomy is considered either inadvisable or impossible. He regards the Bottini as inadvisable in the presence of a median lobe.

Guiteras²⁰ tells us that suprapubic prostatectomy holds the same relation to the perineal operation that abdominal hysterectomy does to vaginal, in that it is the better surgical procedure; and in most cases, suprapubic prostatectomy is preferable to the perineal, on account of the ultimate operative results, the purpose for which the operation is performed, although the mortality is higher; for it is for the relief of the gnawing symptoms and the dangerous complications that we operate.

Where the state of debility of the patient is such that radical primary prostatectomy would be attended by great risk, Chetwood²¹ states that excellent results are obtained by performing the operation in two stages: first, draining, until the patient recuperates his powers of resistance; and then performing the operation.

Loumeau²² held an autopsy on a patient who died three days after a prostatectomy by the method of Freyer. In this case, the entire gland was extirpated in one piece, the urethral prostatic mass coming away as a whole, leaving, however, small islands of the gland behind. In this procedure, the internal sphincter and the prostatic urethra were removed as far forward as the verumontanum, the ejaculatory duct being torn across. There were no signs of any infiltration of urine from the prostatic wound.

After suprapubic prostatectomy, the prostatic cavity is reformed in two different manners, according to whether it is a subtotal prostatectomy, with preservation of the prostatic urethra, or a total prostatectomy, comprising the gland and prostatic canal. In the first case, the walls of the

prostatic urethra spread out, until they come in contact with the walls of the prostatic cavity, forming somewhat of a funnel, the bowl of which is at the vesical neck, and the narrow part continuous with the membranous sphincter of the urethra. In the second case, the bladder and prostatic cavity form together a cavity in the shape of a reversed gourd, the large part corresponding to the bladder, and the anterior, or smaller part, to the prostatic region. In both cases, the prostatic cavity is made a part of the vesical reservoir. In the latter case, the physiological neck is transformed to the membranous sphincter—which is indeed the true sphincter of the bladder—the integrity of which is indispensable to continence after prostatectomy. It appears that the prostatic region is recovered by mucous membrane, which is continuous with that of the bladder.

It is the physician's duty, says Barker,²⁸ when one is called to relieve a patient's first retention, in cases of prostatic hypertrophy, to first use the catheter and relieve his patient, and then and there to impress upon him the necessity of the removal of the gland as quickly as the patient can get to the hospital. It is also his duty to return to his patient every eight hours, and draw the urine, until the patient goes to the hospital. The old practice of putting the catheter into the hands of the patient, and teaching him its use, should be condemned; for at this time the patient is in such a condition usually that prostatectomy is to him a benign operation, whereas should the physician fail to advise properly at this time, he has lost his opportunity, and can do little but harm, for, the patient having learned the use of the catheter, this condition may subside, and lead the patient to believe that he is cured, when, indeed, the danger has been but delayed. Catheter life becomes continuous, and infection invariably follows, sooner or later. Cystitis, with all of its torments, harrasses the patient, until, when a physical and mental wreck, he seeks surgical aid, perhaps now for the first time advised by his physician to take advantage of it. It is a compliment to surgery that it restores to health and comfort a very large percentage of these patients, even at this time.

Le Fur²⁴ has observed quite a number of cases of prostatism between the ages of 35 and 50, which he designates "young prostatists." Even in these comparatively young men, we find two distinct types of inflamed prostates—the one hard, often small, sometimes uniformly hard, but more frequently indurated in places; the other large, soft, vascular and congested.

Prostatism is inflammatory in its origin, whether the ultimate result be neoplastic, hypertrophy or atrophy. The hard, small prostates develop more rapidly and offer a worse prognosis than the other variety. Much benefit has been derived from high dilatations of the posterior urethra, combined with ordinary methods. There is no doubt but that by applying radical principles of treatment, we may observe a diminution in the cases of prostatism and prostatic hypertrophy.

Stern²⁵ mentions some untoward effects of prostatic massage. During the course of treatment, the patients developed pain in the perineum, nates and posterior region of the thigh, shortly after the institution of prostatic massage, the continuation of which greatly aggravated the condition, while its discontinuance, combined with rest and appropriate local and internal treatment, was followed by recovery in from two to four weeks.

He is acquainted with numerous cases, in which the spreading of infection by dissemination of pathological glandular contents was ushered in, or facilitated by, massage; and in some cases sciatica and inflammation, or irritation of other nerves may supervene in the wake of prostatic massage.

Watson²⁶ proposed to substitute bilateral lumbar nephrotomy, with ligation of the ureters, and the establishment of renal fistulæ, in cases of bladder tumor, for ureteral implantation in connection with bladder resection, or total extirpation; and that the bladder operation be done after an interval, and not at the same time as the nephrotomy.

So far, operative procedures for benign and malignant tumors of the bladder have proved more or less unsatisfactory, showing a high mortality and frequency of recurrence, due largely to the failure to operate soon enough and radically enough, in both the benign and the malignant tumors, and to the defects inherent in ureteral implantation.

For inoperable bladder cases, he suggests that the nephrotomy could be utilized for securing the relief that might be expected to result from diverting the urine from the bladder. In suitable cases, total extirpation of the bladder is to follow the nephrotomy, a month or so later.

He further suggests that in extirpating the bladder, the organ be first approached from the perineum, separating the rectum from the prostate, then opening the peritoneum suprapubically, and removing the bladder unopened through this cut—a procedure which offers us much greater facility for accomplishing the extirpation of structures involved, and secures much greater thoroughness than if the operation is undertaken extraperitoneally.

Wallace²⁷ tells us that symptomless hæmaturia is in the majority of cases the first symptom of vesical tumor, and that pedunculated tumors are not more favorable for treatment than sessile implanted tumors of a similar nature. While removal of the tumor, in a certain proportion of cases can be complete, and no recurrence takes place, yet even if recurrence does occur, the patient is for a time relieved from distressing symptoms, and life is prolonged in greater comfort. In cases unfavorable for cure, operation should be delayed until the symptoms are so severe that the patient's life is rendered very unpleasant, and his health is suffering.

In all cases of vesical tumor, whether the operation be curative or palliative in its object, the suprapubic route is the best to adopt.

From a study by Davis²⁸ of 41 cases of primary tumors of the bladder, taken from the clinical records of the Massachusetts General Hospital, he has observed that stone in the bladder is not an etiological factor of importance in the causation of these tumors..

In the determination of the benign or malignant character of papillary epithelial tumors of the bladder, the condition of the underlying bladder wall in regard to epithelial infiltration is a most satisfactory and reliable guide. Papillary tumors of the bladder, proved to be histologically malign, may readily lead to a fatal result if let alone. Surgical intervention at the proper time, in the case of pedunculated papillary tumors of the bladder, offers a very fair chance of long immunity, if not of permanent cure.

Surgical intervention should consist of excision of the tumor in toto, with the margin of the bladder wall at its base, including mucosa, sub-mucosa and muscularis in part, and the defect in the bladder wall closed with sutures.

To avoid the inconveniences and disadvantages of vesico-vaginal fistulæ made in the treatment of certain cystalgias, Rochet²⁹ proposes, and has undertaken in one case, with good results, the following procedure: a transverse cut one and one-half to two centimeters wide is made through the vaginal mucosa, a finger's breadth behind the urethral meatus. The vaginal mucosa is dissected up, until the sphincter of the bladder is reached, when a section of the sphincter muscle of the bladder is removed. Because of the intimate connection of the muscles to the vesical mucosa the latter is usually injured, and urinary incontinence is thus established. But as the route is not direct, the vesical and vaginal openings being distant from one another, the fistula formed will easily cicatrize. It takes some time for the sphincter ends to unite, so that the incontinence produced will relieve the condition; as the pains will disappear, and the local and general condition improve.

Certain vesical disturbances are quite frequently observed with women, sometimes very painful and rebellious to treatment, of which the interesting point is that they arise without a clear reason, and may resemble, at least in appearance, cystitis due to ordinary causes. There are sufficiently common symptoms to classify them under one head—cystalgia of women. They are very rarely seen in early youth, but are found by preference in the later years of life; and when in these cases, as in others, the ordinary means of treatment at our disposal fail, surgery offers relief, and in the old and stubborn cases urethral dilatations and internal sections of the sphincter, as described above, are of signal service.

Garceau³⁰ suggests cystotomy for cases of cystitis in the female, be they of nervous origin, tubercular, or simply chronic cystitis, with or without infection of the upper urinary passages. In tuberculosis of the bladder, in the incipient and long-standing cases, he feels that with a cystotomy,

combined with proper treatment, a cure should be expected. In cases of non-tuberculous cystitis, with infection of the upper urinary passages, the cure of the disease of the upper passages goes a great way towards eradicating the cystitis, but a great many patients will not submit to a serious kidney operation. A cystotomy relieves the patient from her suffering in a great measure, and if the opening is allowed to remain, the kidney will, in some cases at least, atrophy, and the fistula may be closed.

Trendelenburg⁸¹ endeavors to aid the direct union of the freshened edges in cases of ectopia vesicæ, by producing a separation of the pelvic bones at the sacro-iliac synchondrosis, in order to provide for a closer approximation of the two halves of the pelvis at the symphysis, and consequently of the edges of the defect. He mentions three cases of bladder ectopia, which were operated upon several years ago by this method, with excellent results. In all three patients, the defect, which was complete, was securely closed, and no fistulous openings are present. The bladder when distended consists of a spherical cavity, lined with mucous membrane; and while there is some tendency to the formation of small concretions in the bladder, it is by no means as marked as in certain cases operated on by Thiersch, which the author has had occasion to examine.

He feels that it would be wise to go back to the old idea advanced by Demmé and Passavant, and to make an attempt to bring about the desired changes in the bony structures of the pelvis by orthopedic measures. Rapidly growing osseous tissues of the young do not offer much resistance to even slight degrees of pressure, provided it is constantly applied. The bone yields, and gradually undergoes marked alteration in form and contour, as illustrated by cases of congenital macroglossia, and by the feet of the Chinese women.

There seems to be no good reason why, with the exercise of time and patience, the infantile pelvis may not be similarly moulded in cases of vesical ectopia. This would produce practically the same conditions which are present in epispadias associated with a partial ectopia of the bladder; and we should then expect to have some satisfactory operative results, as in the less severe types of the deformity.

Moynihán⁸² reports the relief of a case of extroversion of the bladder by transplantation into the rectum. The ureters, with the portion of the bladder wall surrounding them, were turned into the rectum and stitched there, the ureters having previously been catheterized. All urine escaped by the rectum, and at the end of a month the control was perfect. Several months after the operation, the interval between the acts of emptying the rectum was three to five hours; the urine was normal on examination, and no line of junction could be felt between the mucous membrane of what had been the bladder and the mucous membrane of the rectum.

In operating for the cure of hydrocele, Belfield³³ proposes, after evacuation of the fluid with trocar and canula, to distend the sac with warm salt solution, until the escaping water shows only a trace of albumen by the nitric acid test. An ounce or more—according to the capacity of the sac—of carbolic acid—pure or 95 per cent—is injected, the scrotum thoroughly manipulated to secure contact throughout, and the acid allowed to escape. The residual acid is neutralized by the injection of alcohol. After the escape of the latter, the canula is withdrawn, and the punctures are sealed. The author has devised a special canula for this operation.

Belfield³⁴ suggests direct irrigation and drainage through the vas, in certain diseases of the seminal duct and vesicle, and claims excellent results have followed this method of treatment. The vas is brought up against the skin of the scrotum, an incision made down and into it, and the cut edges then stitched to the skin, creating a fistula, through which solutions may be injected into the vesicle. When desired, this fistula may be closed, and the continuity of the canal restored.

In spite of the over-enthusiasm, according to Lydston,³⁵ which attended the introduction of cord operations, it is not fair to push them aside simply because they did not fulfill the extravagant expectations of those who first advocated them. Vesectomy has a certain range of application in sexual neurasthenia, for spermatophobiacs, genuine spermatorrhea and pseudo-spermatorrhea. In intractable chronic prostatitis and seminal vesiculitis, it is of the greatest value. Its beneficial effects are due not only to the change which it induces in the circulation, and innervation of the prostate, but also to the rest which it secures to the seminal vesicals. After the operation has accomplished its purpose, the continuity of the ducts may be re-established.

Cases of seminal vesiculitis are often so profoundly neurasthenic that no surgical procedure is likely to give relief; but in these cases especially, vesectomy should be given a trial before the major operation of vesiculotomy is resorted to. A very important field of usefulness for vesectomy is recurrent epididymitis. In several cases of enlargement of the prostate, in which the patients were greatly debilitated by frequent and severe hemorrhages, vesectomy was successful in relieving them, or checking them, until the patients were able to gain sufficient strength to endure prostatectomy.

Bazet³⁶ advises that the epididymis should be incised, to obtain the quickest relief, and also the greatest, in the treatment of blennorrhagic epididymitis. Like appendicitis, this affection ought to be considered a surgical one, as in its evolution and morbid process it is contained in a closed cavity, and the septic secretions cannot be drained.

Hilton³⁷ reports a case of teratoma of the inguino-scrotal region, which very much resembled a hernia.

Mark³⁸ considers the air-dilating urethroscope of great advantage over the non-dilating instrument. With the air-instrument, the folds of the urethra can be obliterated, without producing traumatism; the resulting hemorrhage, especially in the posterior urethra, which interferes with the view, is not encountered; a more extensive mucous surface is brought into view; and points in a considerable area may be contrasted. A minimum amount of manipulation is necessary, and if the urethroscope is brought beyond the point to which it is desirable to return, the air dilates the urethra beyond the distal extremity of the tube, which may then be pushed back without difficulty or discomfort.

Lydston³⁹ says that resection of the dorsal vein of the penis cannot be successfully done subcutaneously, but, as it is an operation requiring accurate anatomical knowledge, a careful and painstaking dissection is necessary for its ligation and resection. One of the important elements in the cure of impotency by properly performed operation, is demonstration of its dynamic capacity through purely mechanical circulatory agencies. In a great majority of the cases of impotency that come under the observation of the surgeon a trial of the operation is advisable.

When metallic zinc is placed in the presence of nitrate of silver, according to Balzer and Tansard,⁴⁰ there is immediately produced a double decomposition of the silver salt. Nitrate of zinc is formed, and the silver is reduced to a metallic state, which is deposited wherever the zinc has been in contact with the nitrate of silver.

In order to utilize this reaction in the urethra, an instillation of from ten to twenty drops of a solution of nitrate of silver of from one to two per cent is introduced into the anterior or posterior urethra, according to the place to be treated. Immediately after the instillation of the silver, the zinc bougie is introduced into the urethra and kept there from one to two minutes, in order to allow time for the reaction to take place. The procedure is indicated in almost all cases of chronic blennorrhœa, anterior and posterior, with or without gonococci. It is advised in chronic urethro-cystitis and prostatitis, and suggested in prostatorrhœa and spermatorrhœa.

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GYNECOLOGY AND OBSTETRICS.

IN CHARGE OF

HUGO EHRENFEST, M. D.

PUBIOTOMY.—Pubiotomy, which in 1905 undoubtedly has been the most discussed subject of interest to the obstetrician, in 1906 still holds a prominent place in obstetric literature. The extreme enthusiasm of the past year has been somewhat subdued by the reports of a few unfavorable cases. Pubiotomy now has a mortality—in the latest reports of the year 1905 it still was an operation without a mortality. But in general the results still are satisfactory. The questions, which have been most discussed during the last year, are, how accidental injuries to the bladder could be avoided, and whether after the separation of the pubic bone immediate delivery by means of operative interference or expectant treatment are preferable.

Ruehl¹ refers to the fact that pubiotomy is not the entirely harmless operation which it has been proclaimed at first. In dwelling upon the various dangers incident to the operation he suggests means of avoiding them. The most common of the accidental injuries are those to the bladder. According to his investigations the bladder injuries may arise in four different ways. (1) Direct injury with the guide needle in introducing the Gigli saw. This can be avoided by making a small horizontal incision along the upper edge of the pubic bone and carefully introducing Doederlein's needle after the soft tissues have been pushed off the posterior surface of the bone. (2) Abnormally firm adherence of the bladder to the vaginal wall. The bladder is torn when in the course of the expulsion or extraction of the fetus the vaginal wall ruptures. (3) Abnormally firm adherence of bladder to the descending ramus of the pubic bone. The bladder is torn when the cut ends of the bone separate widely during the passage of the fetus through the pelvis. (4) The bladder is directly injured by the sharp edges of the cut ends of the bone. These three latter causes of bladder injuries, in Ruehl's opinion, can be eliminated if in every pubiotomy, before the Gigli saw is introduced, the bladder is pushed off the vagina and cervix, as is done in the first stage of a vaginal hysterectomy. It is interesting to note that in the discussion following the reading of this paper, most of the speakers, among them Rosthorn and Pfannenstiel, repudiated such a suggestion. All the speakers agreed, however, that pubiotomy cannot any longer be regarded an operation free of danger, and should not be performed by the general practitioner as was first suggested by its enthusiastic advocates. A very interesting point was brought out by Pfannenstiel. He thinks that after a pubiotomy a forceps extraction should not be made

in the usual way, i. e., by pulling the head upward around the symphysis as soon as it has reached the perineum. In this way the bladder is squeezed against the sharp cut ends of the pubic bone and may be injured. The head should be extracted in a downward direction. In Bumm's clinic the guide needle is introduced from below upward and the report of Hocheisen² covering 16 pubiotomies performed in this clinic, mentions one case of bladder injury. Patient recovered and the fistula healed without any interference. It seems that this favorable outcome is rather the rule if a permanent catheter is left in the bladder for about two weeks. Another instance of injury to the bladder is recorded by Semmelink,³ also with spontaneous cure. In this case the needle was introduced from above, which, according to most writers, is the safer way to avoid these injuries to the bladder. Henkel⁴ explains the various advantages of this route in avoiding the bladder and the large venous plexus which lies close to the pubic bone. He does not believe that the direction from below upward really can, as is claimed, prevent injury to the crus clitoridis. The advice of some writers to always wait for the spontaneous expulsion of the fetus, cannot be accepted. A pubiotomy, in most instances, can be considered entirely successful only if the fetal life is saved by the operation. The condition of the fetus, therefore, first of all will decide whether an expectant treatment is justified or immediate delivery preferable. For the majority of cases the latter procedure will be necessary. Henkel mentions a case of placenta previa centralis, complicated by a contracted pelvis, in which the saving of both mother and child undoubtedly must be ascribed to the pubiotomy. In another paper the same author⁵ describes the mode of procedure in the Ols-hausen clinic in Berlin. If, in a certain case, pubiotomy is contemplated, the progress of labor is carefully watched. The operation is performed when the cervix is fully dilated, and, if possible, before the membranes are ruptured. If there are no indications either on the part of mother or fetus for a forced delivery it is permissible to wait, but never so long until a hurried interference becomes necessary. Frank⁶ and Seeligmann⁷ think that immediate delivery would seem preferable in the majority of cases, because such practice eliminates the disadvantage and danger of a second general anesthesia, following closely the one nearly always necessary for the pubiotomy. Reeb⁸ refuses to accept the dictum of Duehrssen that version should be the delivery of choice. Forceps certainly is less dangerous to the fetus. I think that a still stronger argument against a routine of version must be found in the fact that a pubiotomy can be successfully performed even in infected patients. Indeed therein lies one of the most striking advantages of pubiotomy over symphysiotomy and conservative Cesarean section for relative indications. The introduction of the hand into the uterus for the purpose of a version certainly would seem contraindicated in all cases in which an infec-

tion even can be only suspected, that is, in the majority of cases which in general practice come into the hands of the specialist. Doederlein's procedure is the ideal one in the opinion of Zangemeister.⁹ The Gigli saw is led around the pubic bone. Next, version is performed, and if then, in the course of extraction, difficulty is experienced in pulling the head down into the pelvis, the operator, or one of the assistants, quickly saws through the bone. A few other questions still *sub judice* are considered by this writer. He thinks that it is better to introduce the guide needle from below upward. In this way the horizontal incision above the pubic bone is avoided and the operation rendered completely subcutaneous. Stoeckel¹⁰ described a new guide needle resembling a large aneurysm needle. This instrument is highly praised by Bumm¹¹ who, in this article, declares that he would not hesitate to make a pubiotomy in a private house. Seeligmann¹² defends, against Bumm, his guide needle, which certainly looks like a very practical instrument. It is a properly curved hollow probe, which enables one to use the saw simultaneously with the guide needle. Another guide needle has been designed by Frank⁹ constructed like a Cleveland ligature carrier. Another point pertaining to the technique of the operation is considered by Rissmann.¹³ He believes in the drainage of the prevesicular space in every case of pubiotomy and uses for this purpose a silver tube. A special advantage gained by this procedure, in his opinion, is a resulting permanent enlargement of the pelvis. This point of permanent enlargement is discussed by several writers. Reifferscheid¹⁴ thinks that this occurs, at least in an obstetric meaning, if the union between the cut ends remains fibrous in character, that is, if the callus does not ossify. This can be obtained by avoiding a too tight bandage around the pelvis and by permitting the patient to leave the bed on the fourteenth to sixteenth day. The lack of ossification does not interfere with locomotion. A paper of Kannegiesser¹⁵ brings an exhaustive consideration of the whole literature on pubiotomy, with a report of twenty-one operations performed in Leopold's clinic in Dresden. Very instructive are the writer's observations concerning the final consolidation of the severed pelvic girdle. He succeeded in obtaining Roentgen pictures of many of the patients a long time after the operation. He cannot agree with Bauereisen's claim¹⁶ that the callus always remains fibrous. In many of the pictures taken by Kannegiesser a dark shadow between the cut ends of the pubic bone proved the presence of an ossified callus. He considers the operation indicated when, in the presence of a vera between seven and eight and a half centimeters, the disproportion between conjugate and fetal head is evident. The time for action has arrived when the os is fully dilated. Extraction should be performed at once while the patient is under the influence of the anesthetic. Excellent x-ray pictures are also presented in the paper of Hocheisen² already mentioned. They show a light shadow between the cut ends up to

three weeks. In pictures taken later the shadow is darker, and about three months after the operation the picture would seem to indicate the firm osseous consolidation of the bone. Truzzi¹⁷ suggests to obtain the permanent enlargement of the pelvis by placing a plate of decalcified bone between the cut ends. A complicated operation for this purpose, a pelvio-plastic for narrow pelves, has been invented by Credé.¹⁸ He proposes to divide the pubic bone in the typical manner and then to add another cut through the horizontal ramus of the bone, parallel to the pubiotomy cut and about two cm. farther outward. The lower end of this second cut lies within the foramen ovale. A third cut made with the saw, running horizontally from the lower end of the second cut into the middle of the pubiotomy cut, divides into two halves the section of bone lying between the two parallel incisions. The upper half, being of quadrangular shape, is then turned into the gap formed by the separation of the cut ends of the first typical pubiotomy incision. If necessary this same operation, in cases of extreme contraction, could also be performed on the other side. Grave objections are raised by Klien¹⁹ against the suggestion of Credé. Credé—the surgeon—of course is not familiar with the obstetric literature and, therefore, does not know that the idea of this operation is an old one. Frank, Phénomenoff and Kotschekoff have described such pelvio-plastic operations. These operations are superfluous in pelves, which are only slightly contracted. They would prove useless in greatly contracted pelves, and would undoubtedly impair the stability of the pelvis to a most dangerous degree, if performed on both sides, as is advised by Credé. Last year I have mentioned briefly two papers of Sellheim and Rosenfeld read before the meeting of the German Gynecological Society. These papers have now appeared in print. Rosenfeld²⁰ observed that in flat pelves pubiotomy increases the transverse diameters equally in both halves of the pelvis, while in equally or only transversely contracted pelves the increase is comparatively larger on the side of incision. He concludes that the pubiotomy should be made on the side on which the occiput of the fetus lies, or will lie, in case version is contemplated. Sellheim^{21 22} differs slightly from Rosenfeld, in that he found the enlargement equal in both halves in all instances. Sellheim's investigations were directed towards establishing the respective advantages of pubiotomy and symphysiotomy. With an equal separation of the cut ends of the bone the same degree of pelvic enlargement is obtained with both operations, but in order to obtain the same amount of separation three times as much force is required in the pubiotomized pelvis. The change in the shape of the pelvis resulting from these operations is identical in both, always transforming the pelvis into one of the funnel shaped type. Sellheim thinks that at present it is as yet impossible to state positively whether subcutaneous pubiotomy is an operation superior to symphysiotomy, a view in which he is shared by a few

other writers, e. g., Frank.⁶ Bué,²³ in comparing these two operations, is inclined to give preference to pubiotomy, although he had performed once a symphysiotomy with the Gigli saw and had succeeded in finishing the operation just as quick as a pubiotomy. According to Stoeckel¹⁹ the superiority of subcutaneous pubiotomy after Doederlein is evident. A great advantage lies in the fact that this operation, under favorable conditions, can be performed in the house of the patient. But in Stoeckel's opinion the enlargement obtained with symphysiotomy is greater and, therefore, this operation still seems preferable in the cases of extreme contraction. Reifferscheid²⁴ objects to this view of Stoeckel. According to his investigations the cut ends in pubiotomy, exactly like in symphysiotomy, easily separate from five to six cm., and, therefore, pubiotomy is permissible and indicated in cases with a true conjugate down to seven cm. and, in certain instances, even of 6.75 and 6.5 cm. On the other hand, Kroemer²⁵ repudiates the claim of Sellheim that in order to obtain equal separation of the cut ends a force three times as large is necessary in pubiotomy. This certainly is not true for all cases. Very often the bones readily yield to the pressure of the advancing head, and especially in cases of forceps extraction, due care must be taken not to rupture the sacro-iliac joints. This question concerning the relative advantages of pubiotomy and symphysiotomy entered a new stage, when Zweifel²⁶ described his new subcutaneous symphysiotomy. The one chief advantage of symphysiotomy is the lessened danger of a hemorrhage, while the main advantage of pubiotomy lies in the fact that it can be performed subcutaneously. These two advantages Zweifel tried to combine. Attempts of Stoeckel in this direction had failed, because the Gigli saw, led around the symphysis, always had the tendency to glide off to one side. Zweifel obviated this difficulty by first cutting a small groove into the posterior surface of the symphysis by means of a Pott's herniotomy knife. In two cases this new operation proved entirely satisfactory.

Most pessimistic views concerning the future of pubiotomy are expressed by Everke.²⁷ He thinks that the operation will be soon forgotten and thus share the fate of symphysiotomy. This view seems unjustified. Fehling,²⁸ in comparing the results of pubiotomy and artificial premature labor, is willing to admit that the mortality of the first operation probably is somewhat larger than that of the latter operation, but pubiotomy undoubtedly saves more children, and, therefore, must be preferred, in certain instances. But pubiotomy as yet can not supplant premature labor. Whether to deliver at once or to wait, is a question which must be decided upon the conditions presenting themselves in the individual case. Reifferscheid,²⁹ in reviewing the 22 pubiotomies performed in the University Clinic of Bonn, states that, out of a total of 202 cases recorded in literature, the mothers died in 12 instances. One fatal case is recorded by him. The patient died suddenly on the fifth day after

the operation from an embolus in the lung. Of course, it is not certain that the embolism stands in any connection with the operation, but Reifferscheid is willing to accept this theory for his case, because the bladder had been injured and a thrombus had formed around the pubic bone. There is another case of bladder injury mentioned in this series, in which spontaneous cure occurred without any operative interference. A case of fatal hemorrhage is mentioned by Rosthorn,³⁰ while Herz³¹ describes a perfectly successful operation, performed under most difficult circumstances, in the little cottage of a peasant.

A very exhaustive and thorough study of the literature is presented in a paper of Montgomery,³² read before the obstetric section of the International Medical Congress, held in Lisbon. A successful pubiotomy has been performed by the author in 1903. The results of 134 cases collected by him from the literature were uniformly favorable, there being no deaths in cases not infected previous to the operation, and all patients recovering with a perfect union of the bone and perfect gait. The only other extensive paper on the subject which I have so far found in American literature is written by Bill.³³ It contains a very clear description of the various steps of the operation. Two successful cases have been reported this year by two American gynecologists, namely, by Schmidt³⁴ and by Jewett.³⁵ In the discussion following Jewett's paper, Marx mentions two less satisfactory personal experiences with the operation.

FORCED DELIVERY.—During the past year a number of papers have appeared which thoroughly discuss the various methods of artificial dilatation of the pregnant uterus. The question whether the branched metal dilators or cervical incisions are preferable is still far from being definitely settled. The war between Bossi and Duehrssen is still waging, and the latter's visit to the United States has given many American physicians an opportunity to observe personally how vigorously Duehrssen fights for the priority of his operations, and how vehemently he attacks those who disagree with him.

The whole problem of forced delivery, with interesting historical sketches of the development of the various methods, is clearly set forth by Lewis and Holmes.³⁶ Lewis takes up the bloodless (*a not very appropriate term*) methods, viz., manual dilatation, colpeurynter and the metallic dilator, while Holmes considers cervical incisions and vaginal Cæsarian section. These papers state, in an unbiased manner, the various advantages and disadvantages of these procedures, their indications and technique, and close with a carefully compiled bibliography. In an article dealing with the indications of premature labor and accouchement forcé, J. Whitridge Williams³⁷ has the following to say concerning the usual methods of forced dilatation of the pregnant uterus: Harris's method of manual dilatation is difficult and dangerous in all cases in which the cervix is intact, except in cases in which the cervix is unusually soft. Often it is

possible to dilate enough to admit two fingers with Goodell's or Hegar's instruments, after which further dilatation can be obtained by the Harris method. In all cases in which this mode of procedure is not possible, vaginal Cesarean section seems more conservative. Manual dilatation is comparatively safe and easy if the cervical canal is obliterated and the external os offers the only resistance. The colpeurynter is quite satisfactory where haste is not essential. Williams has never employed the Bossi dilator, nor have the statements of its most enthusiastic advocates ever tempted him to do so. Basing his deductions upon the results obtained in Winter's clinic in Koenigsberg, Hammerschlag³⁸ compares the following methods of artificial dilation of the pregnant uterus: Forced extraction on the leg after version has been performed, metreurysis, dilation with Bossi's instrument, cervical incisions and the typical vaginal Cesarean section. Deep lacerations of the cervix and infections represent the chief dangers of all methods. While the Bossi dilator caused the largest number of tears, it excelled in having caused the smallest number of infections. For use in the clinic all the methods are valuable, if properly selected, according to certain indications. For general practice only the first two methods are really practicable. Bossi's instrument can be used in the home of the patient, but it should be handled only by a specialist; vaginal Cesarean section should be performed only in a hospital. A symposium on mechanical dilatation versus incision of the cervix of the pregnant uterus was held at the last meeting of the American Gynecological Society in Hot Springs.³⁹ After a general consideration of the indications of the various procedures by Harrison, Harris dwelt upon the advantages of his method of manual dilation. But of late he also makes use of a mechanical dilator of the Bossi type. He has fitted the instrument with a dynamometer, which registers, in pounds, the amount of strain exerted upon the cervical ring. Edgar is in favor of a bimanual dilation. Grandin believes that cervical incisions should not be resorted to, if the complications calling for intervention justify delay. In his opinion such devices as the Bossi dilator should meet with the unqualified condemnation of American obstetricians. They are needless where the educated hand exists, they are dangerous under any condition. In the event of incisions being indicated the typical vaginal Cesarean section is preferable to simple cervical incision, but the indications for either one of these operations are extremely limited. Duehrssen, at this occasion, read a paper, presenting in detail the indications, the technique and the various advantages of his vaginal Cesarean section. Another article of Duehrssen⁴⁰ contains a vigorous protest against certain views expressed by Knapp concerning the opinion of German gynecologists in regard to Bossi's method. "I, together with other gynecologists," Duehrssen writes, "received the impression (at the meeting of the German Gynecological Society in 1905) that Bossi's method received its long-

deserved, honorable entombment, while *vaginal Cesarian section received indisputable recognition as the universal method.*" The rest of this paper is taken up with a rather uninteresting personal polemic against Knapp and a few other opponents and the lengthy enumeration of his arguments, why he should be considered the inventor of the cervical incisions. The article closes with the following advice, printed in italics and apparently addressed to all American obstetricians: *I warn you against the use of the instrument recommended by Knapp.* What Duehrssen himself thinks of the operation invented by him is best expressed in still another paper,⁴¹ when he says: Vaginal Cesarian section is the safest method for the emptying of the pregnant uterus. Deep cervical incisions, in the hands of a physician who is at all able to handle the knife, are child's play. In an answer to Duehrssen's attack, Knapp⁴² shows that cervical incisions have been practised as early as 1790. Duehrssen has no right to claim priority for these incisions which are decidedly dangerous and should never be performed. Bossi,⁴³ in quoting two new cases, defends his method against Duehrssen, whose views he regards "as a dangerous error which stands in conflict with the first principles of modern surgery." Duehrssen,⁴⁴ in a prompt response, thinks that Bossi is fighting windmills, since he himself certainly would not have performed vaginal Cesarian section in the two cases quoted by Bossi; in fact, he cannot see that there was any justification for any form of forced delivery in either one of these two particular cases. The tendency of Bossi's answer⁴⁵ to this attack is well expressed in the title of the paper: "The deep incisions as method of forced delivery and vaginal Cesarian section must be eliminated from the practice of obstetrics." Bossi feels that this should be done in the interest of many mothers and in compliance with the tendency of modern surgery, which opposes the destruction and mutilation and favors the preservation of organs. Hofmeier of Wuerzburg also warns⁴⁶ against the criticless employment of the so-called vaginal Cesarian section, which more appropriately should be called colpo-hysterotomy, and has been practised long before Duehrssen. He does not believe that this "surgical era of obstetrics" really marks an advance of obstetrics, with the possible exception of the modern treatment of eclampsia. In justice to Duehrssen, it must be mentioned that, in a discussion following the reading of two papers by Newell and Edgar,⁴⁷ in the obstetric section, at the meeting of the American Medical Association, Rosthorn of Heidelberg stated that, in general, German obstetricians give preference to vaginal Cesarian section as the procedure more surgical than mechanical dilatation. Jolly⁴⁸ employed the Bossi instrument with perfect success in four cases of premature detachment of the placenta, all four mothers and three of the fœti having been saved. The great advantages of the rubber bag are clearly and convincingly set forth in a paper of 70 pages by Buerger.⁴⁹ The col-

peurynter—or, as this apparatus in this connection more properly is called, the hystreurynter—is used in Schauta's clinic extensively. It is certainly the ideal appliance to imitate, supplant or support the dilating function of the fetal membranes.

ABDOMINAL CÆSARIAN SECTION. Three larger contributions to this subject bring very little new concerning the indications or the technique of the operation; they are, however, of interest, because they summarize the results of an unusually large number of cases handled in one clinic or by a single operator. If nothing else, these statistics prove that the advocates of Cæsarian section, in the treatment of placenta previa, have no right to claim that the mortality of this operation is nil or almost nil.

Neumann⁵⁰ presents a very exhaustive and interesting report of 180 Cæsarian sections, performed in Schauta's clinic in Vienna. The results, as a whole, are extremely satisfying. This essay of 175 pages probably forms the most thorough discussion extant of the indications and technique of this operation. Olshausen,⁵¹ in a short article, gives an exceedingly clear resume of the present status of Cæsarian section. The report is based upon the experience gained with 118 sections performed in the writer's clinic in Berlin. He considers Cæsarian section justifiable in eclampsia, whenever very severe convulsions occur very early in labor, or before labor really has begun; of course, in these cases, vaginal Cæsarian section has to be given preference. In discussing the various indications the writer mentions the fact that in the United States this operation has also been recommended in the treatment of placenta previa. "In Europe," he states, "nobody seems to have accepted this indication, which, even in America, seems to have more adversaries than supporters. Before long this indication will have disappeared, or—more correctly expressed—will have been forgotten as a blunder." No method of suture, no particular suture material, in Olshausen's opinion, will safely eliminate the danger of a uterine rupture in the scar during a subsequent pregnancy. A clinical study of 48 sections is presented by Davis.⁵² Four of the patients died, of whom three were infected at the time of the operation. A very clear and well-illustrated description of Davis' technique is appended. Boyd⁵³ reports a series of 14 successful cases. Quite accidentally I came across the account of a most unusual Cæsarian section, performed under most unfavorable conditions in country practice. This operation was done by a Dr. Reynolds of Vashti, Va.,⁵⁴ on a negro girl, 13 years old, in February, in a small log cabin, with one door and a hole in the end of the house, without glass, for a window. A little coal-oil lamp, without a chimney, furnished the light. I quote from this article: "The uterus (after removal of fetus and placenta through an incision reaching from the fundus to near the cervix) contracted rapidly, so we had some difficulty in putting in stitches. I then put *one* (!) stitch in the middle of the uterine incision." The only instruments used in the operation

were a sharp-pointed bistoury, one needle and some silk and wire sutures. The patient made a perfect recovery.

TOXEMIA. ECLAMPSIA. It is with intention that the literature of these two subjects is not reviewed in two separate paragraphs. Although a few writers, as will be seen in the following, still adhere to the older conception, the view undoubtedly is fast gaining in favor that eclampsia is only a special form of toxemia, but not a disease of separate entity. In my opinion⁶⁶ the day is not far distant when morning nausea, pernicious vomiting, the increased reflex irritability during pregnancy and eclamptic convulsions, all the minor disturbances and the serious complications incident to pregnancy, will be explained as due to a toxemia, which is more or less peculiar to pregnancy and is brought about by a disturbance in the equilibrium between the production, i. e., resorption and elimination or destruction of certain toxic substances in the maternal organism. On account of the various sources from which they originate these toxins undoubtedly are of different chemic constitution and character, and the prevalence of the one or the other, in my opinion, accounts for the variation in the clinical picture under which a pathologic degree of toxemia manifests itself in the pregnant woman.

Zweifel⁶⁶ thinks that sarco-lactic or paralactic acid is the toxic substance responsible for eclamptic convulsions. In examining the urine of eclamptic patients he ascertained two interesting facts. He found that the amount of urea in proportion to the total amount of nitrogenous substances was diminished, while the ammonium compounds on the other hand were largely increased. This he explains as the result of a deficient oxidation of the albumen in the body. This insufficient supply of oxygen to the red blood cells, in Zweifel's opinion, also accounts for his other interesting finding, namely the presence of lactic acid in the urine of 17 consecutive cases of eclampsia. He concludes, from his observations, that lactic acid must be intimately connected with the causation of eclampsia. This theory is further developed in another article⁶⁷ in which he records the observation, that an extract from the placenta contains more sarco-lactic acid than the maternal blood, and that the amount of this acid in the fetal blood, collected from the umbilical cord, in comparison to that of the maternal blood rises to the proportion of three to one. The conclusion is then drawn that the fetus is the source, i. e., insufficient oxygenation in the fetus is the cause of eclampsia. Prompt emptying of the uterus, therefore, alone can be regarded the logical mode of treatment. In two articles, devoted to a most interesting consideration of pernicious vomiting J. Whitridge Williams^{68 69} shows why we have to differentiate between a reflex, a neurotic and a toxemic form of pernicious vomiting, and why eclampsia is an essentially different form of toxemia. He considers the neurotic form the most frequent variety of hyperemesis, which can be cured by suggestion or a modified rest cure. It may be mentioned in this

connection that Williams is not in favor of the view recently advanced by many writers that the underlying cause of this neurosis may be a mild toxemia. In toxemic cases of pernicious vomiting—in contradistinction to those of the reflex or neurotic variety—the urine shows a marked decrease in the amount of nitrogen excreted as urea, and a characteristic increase in the amount of nitrogen excreted as ammonia. If, according to Williams, the percentage of ammonia rises above ten per cent of the total amount of the nitrogen output, the patient's condition must be considered critical and the artificial interruption of pregnancy is indicated. The justification for his refusal to accept the recent theories concerning the unity of eclampsia and other toxemias of pregnancy Williams finds in his observation that in the pre-eclamptic state, on the other hand, the ammonia coefficient is normal, or if raised, usually is of a favorable prognostic significance. Various objections have been made against these views of Williams. Wolf⁹⁰ considers them unwarranted because this peculiar relative increase of the ammonia excretion is typically observed in all forms of starvation, being most pronounced in persons who are more or less devoid of body fats. They have to live on their proteins during the period of inanition. Zweifel's theory of the acid intoxication apparently has found valuable support in the results of investigations carried on by Fueth and Lockmann⁹¹. They claimed to have been able to prove the presence of small quantities of sarco-lactic acid in cerebro-spinal fluid withdrawn during eclamptic seizures. Wolf refuses to accept the findings of Zweifel, Fueth, etc., as conclusive, especially because such minimal quantities of lactic acid are found in the urine under many other conditions. In his opinion it is futile to try to explain the etiology of pernicious vomiting through the medium of an acid intoxication. "Any attempt to recognize or to diagnosticate degrees of this disorder through an examination of the urine for ammonia, for aceton, aceto-acetic acid or oxy-butyric acid is lacking the support of any thoroughly sound physiologic experimental groundwork." Edgar⁹² accepts the theory of the unity of all toxemic conditions. In his opinion the belief is slowly but surely gaining ground, that a special autotoxic state of pregnancy does exist. This toxic condition of the blood of pregnant women is due to faulty metabolism and *possibly* arises from hepatic insufficiency. It shows itself most commonly by trivial ailments which we see in many gravid women, but exceptionally by serious, severe and even fatal affections, such as acute atrophy of the liver, pernicious vomiting and eclampsia, conditions which today are believed to be closely related. The writer points to the fact that for obvious reasons it has been assumed that errors in metabolism must lead to changes in the chemical constitution of the urine in so far as the latter would contain unoxidized compounds to replace the total nitrogen. But basing his belief upon the investigations of Wolf, mentioned above, he does not feel ready to accept the claim of Williams

that a rise in the percentage of ammonia above ten, signals danger and would justify operative interference. So far, chemical urinalysis can not guide the practitioner in the diagnosis and prognosis of pregnancy toxemia. Almost identical views are expressed by Straus⁶³ in an excellent paper which considers the whole problem of toxemia in a most thorough manner. Straus also seems inclined to believe that the diverse clinical types of pregnancy toxemia, including eclampsia, are expressions of one and the same exciting cause. Audebert⁶⁴ observed as the result of a hepatic toxemia of pregnancy in several patients that complexity of symptoms which usually is regarded as characteristic of exophthalmic goitre and suggests a possible etiologic connection between these two conditions. According to Dupouy⁶⁵ in women with a hereditary taint an autointoxication of pregnancy often becomes responsible for the development of a true psychosis.

Liepmann in several contributions advances further proof for his theory of the placental origin of the toxins of eclampsia. He describes⁶⁶ his results with injections of an emulsion of dried placentas of eclamptic patients into rabbits. Characteristic pathologic phenomena occurred, and in many instances convulsions ensued. Liepmann endeavors to prove that the toxin is within the placenta fixed in the protoplasm of the cells. Attempts to extract this toxin so far have failed, nevertheless the author hopes that some future day will bring the specific serum for the treatment of eclampsia. The one objection of importance, which has been made against the theory of the placental origin of the eclampsia toxin, is that it does not explain the cases in which eclamptic convulsions appear subsequent to the expulsion of the fetus and its membranes. In another article⁶⁷ Liepmann tries to prove that this objection is untenable. His investigations show that the liver is capable of retaining a large amount of such toxins and later may not be able to neutralize them. In this case they enter the maternal system and lead to convulsions even after the expulsion of the fetus. Still another proof for the placental origin of these toxins, in Liepmann's opinion, is found in the occasional observation of eclampsia in the presence of a completely macerated fetus, which undoubtedly has been dead for some time. He describes a case of this kind⁶⁸ and mentions the noteworthy fact that Duehrssen once has collected the records of 200 cases of this sort. Weichardt and Piltz⁶⁹, continuing investigations first begun by Weichardt, Leipmann, Bergell and others, found that the toxins are formed as the result of a cytolytic process caused by the transition of placental tissue into the maternal system. These toxins produce eclampsia if the maternal blood does not contain the necessary amount of anti-endotoxic substances to inhibit their action. These new investigations represent an advance in our knowledge of these processes. They show that it is not an actual anti-toxin, as usually assumed, which neutralizes these cytolytic toxins.

The theory of Nicholson that an insufficient function of the thyroid gland stands in close relation to the causation of eclampsia has found many advocates. More recent investigations, however, tend to show that possibly it is not the thyroid gland itself, but the so-called parathyroid glands whose function may be at fault in cases of eclampsia. These parathyroid glands (or bodies) have first been described by Sanderstroem in 1880. There are usually four of them, two on each side of the thyroid gland. Microscopically they are easily distinguishable from thyroid tissue. The importance of the parathyroid bodies as organs with an internal secretion today is positively established. The observations of Gley made to this effect in 1893 have been confirmed by many investigators. Giulio Vassale first furnished valuable practical support for this theory by his striking results obtained in the treatment of tetany and eclampsia with an internal administration of an extract made from parathyroid tissue. Quite recently Vassale⁷⁰ has reported most satisfactory results obtained by him and others in investigations concerning the parathyroid theory of eclampsia. Pathologic changes and the congenital absence of these bodies have been ascertained in women who died during an eclamptic attack. Further good results in the treatment of eclampsia with the extract of parathyroid tissue have been recorded. Zangrognini, Erdheim and others have demonstrated by experiments on animals that during the last third of pregnancy an insufficient action of the parathyroid bodies may lead to severe convulsions (experimental eclampsia). In new experiments, made by Vassale himself, it has been found that the extirpation of these bodies causes an albuminuria during the last few days of pregnancy, which disappears like the albuminuria of eclampsia promptly after labor. The work of Vassale has led Frommer to experiment along similar lines. He⁷¹ concludes that parathyroid tissue secretes a substance of an antitoxic character which protects the animal against the development of a tetany. Total parathyroidectomy performed on rabbits often causes their death, and if combined with thyroidectomy often results in a fatal tetany. But he was unable to confirm Vassale's theory of an etiologic connection between the function of these bodies and eclampsia.

Vaquez⁷² calls attention to his interesting observation that an increase in the blood pressure to 19-27 cm. (against 13-14 normal, measured with the apparatus of Potain) is one of the most reliable prodromal symptoms of eclampsia. A persistence of the high pressure is always of bad prognostic significance, even if other symptoms seem to improve. The idea that an increased tension of the cerebro-spinal fluid in some way accounts for the convulsions, during the last few years has led various investigators to suggest a spinal puncture as a therapeutic measure. In summarizing all the reports so far extant on this new mode of treatment of eclampsia, Thies⁷³ comes to the conclusion that only in very few

instances an apparently favorable effect has been observed. It seems that the withdrawal of the spinal fluid shortens the comatose state but, on the other hand, it does not seem to reduce the number of subsequent convulsions. These empiric conclusions, in Pollak's opinion⁷⁴, harmonize entirely with the results of his own histologic examinations of the central nervous system of patients who died during eclamptic convulsions. He found marked changes in the spinal cord and in the nuclei of the motoric cranial nerves, especially of those controlling respiration.

The interesting problem of renal decapsulation in cases of eclampsia, an operation first performed by Edebohls of New York, is thoroughly discussed in a thesis written by Chambrelent and Pousson⁷⁵. It is the purpose of this operation to diminish the intrarenal tension. In order to obtain this result in a still more effective manner these writers suggest to add to the decapsulation, whenever necessary, a deep incision into the substance of the kidney. As far as the toxemic condition is concerned an additional beneficial effect must be expected from the loss of blood incident to this incision. They record the case of a primipara in whom eclamptic convulsions continued after delivery in spite of vigorous medicinal treatment. Patient lapsed into a deep coma. The decapsulation of both kidneys with a nephrotomy on one side led to prompt relief of the anuria. The coma disappeared on the third day and patient recovered. In a small piece of tissue removed from the incised kidney the typical signs of an acute parenchymatous nephritis were found. Pinard, who acted as the reporter of this thesis before the academy, added that he has performed this operation in three patients, all of whom recovered, but he believes that the operation should be reserved for cases with a complete anuria. A third case of successful decapsulation in a case of eclampsia has been reported by Edebohls.⁷⁶ At this occasion he once more has emphasized the observation made in his second case, that decapsulation may stop the convulsions without the uterus being emptied. In cases of eclampsia occurring early in pregnancy, this operation, therefore, may have the additional advantage of saving the life of the mother without sacrificing that of the fetus. This particular point is objected to by Sippel⁷⁷, who, long before Edebohls, had suggested renal decapsulation for the relief of the anuria during an eclamptic attack. In his opinion the same stasis with the resulting suppression of urine is likely to return with the further progress of pregnancy. He thinks that this operation should be performed only after the uterus is empty. The few successful operations so far recorded permit the conclusion that the convulsions subsequent to labor are not necessarily due to retained toxins, as explained by Liepmann, but may be caused by pathologic intrarenal tension.

A new suggestion for the symptomatic treatment of eclampsia has been made by Laurendeau⁷⁸, who administers hypodermically scopolamine hy-

drobromate in doses of one-fiftieth of a grain, with one-fifth of a grain of morphia and fifteen drops of fluid extract of veratrum viride. After an hour and a half, if the attacks continue, this dose is repeated. A third injection can be given another hour and a half later, containing the same doses, less five drops of the veratrum.

Finally I wish to mention two papers containing therapeutic advice quite out of harmony with the mode of treatment as commonly practiced by European and American obstetricians.

Roger de la Harpe⁷⁹ describes the routine treatment of eclampsia in the famous Rotunda Hospital of Dublin. Its chief feature is the administration of morphia in heroic doses. One-half grain doses are given hypodermically to a maximum total of two grains within twenty-four hours. The elimination of toxic material is propagated by washing out of the stomach but curiously enough not one word is said in this article concerning hypodermoclysis. "Induction of labor is never performed, nor is labor counted on in this treatment. The only intervention permissible locally (and this only in very exceptional cases) is the application of the forceps, when the head is on the vulva." The fact that the maternal mortality from eclampsia in the Rotunda Hospital is only 16.9 per cent (!) proves to the writer conclusively that this is the best method of treating eclampsia. I feel sure that no American obstetrician will feel inclined to raise his mortality to 17 per cent by adopting this treatment. Two French investigators, Macé and Pierra,⁸⁰ warn against the use of saline solution. Studying the freezing point and the amount of chlorines in the urines of four classes of women, viz., non-pregnant, normally pregnant, pregnant with albuminuria and those suffering from eclamptic convulsions, they apparently established the fact that the prognosis of eclampsia is more unfavorable if the quantity of the urine is diminished, if its molecular concentration is high and if the amount of chlorines excreted is inferior to that resorbed. But these exactly are the conditions they obtained by the use of saline injections. The final conclusion of their investigations is that the saline solution in the treatment of eclampsia must be replaced by a plain water diet, since even milk is harmful in that it contains a considerable amount of chlorines.

In discussing insidious affections of the kidneys in the young, Gillmore⁸¹ mentions the interesting observation of Castaigne and Rathery, that the transition of certain nephrotoxic substances to the fetus *in utero* may account for nephritic conditions in a child born by a mother who suffered from a nephritis during pregnancy. It is obvious that such a "hereditary" transmission of a nephritis is more likely to occur in cases of eclampsia.

PLACENTAL SYPHILIS.—The spirocheta pallida has been repeatedly found in the placenta in cases of maternal syphilis. While it has been claimed by Menetrier and Rubens-Duval, Natten-Larier and Brindeau⁸²

and others that the organism can be detected only in the fetal portion of the placenta, in the infiltrated and necrotic connective tissue of chorionic villi and in the tunica media of vessels, Wallich and Lecaditi⁸³ have succeeded in demonstrating the spirocheta also in decidua. Their case is of special interest because neither father nor mother exhibited any signs of syphilis, the infection being only suspected from a peculiar pemphigus-like eruption of the new-born. From similar observations Borrel and Burnet⁸⁴ consider the examination of the placenta for spirochetæ a valuable means of ascertaining a syphilitic infection in doubtful cases.

The presence of a specific syphilitic toxin in the placenta of syphilitic mothers can be proved by a new serum diagnosis which has been worked out by Wassermann, Neisser and Bruecke.⁸⁵ Their method is a modification of the serum diagnosis of Gengon for typhoid, meningitis and tuberculosis.

Zangemeister⁸⁶ confirms the claim of Versé and Schlimpert that the spirocheta pallida can be found in almost all organs of the macerated fetus of a syphilitic mother. Of six feti examined by Zangemeister in five the result of the examination was positive. According to Beitzke⁸⁶ the spirocheta most easily is found in sections of the liver of a macerated fetus, and Huebschmann⁸⁸ detected them in large numbers even in the thyroidea.

PELVIMETRY.—The history of the short life of one of the newest methods of pelvimetry is worthy to be recorded. Bylitzki in 1904 invented a new method of instrumental mensuration of the pelvis by means of peculiarly shaped bars (Winkelhebel), which are pressed between symphysis and promontory. Gauss was the first to attest to the value of the instrument and to suggest some modification in the shape of these bars—such as bending the handle a little more downward. And every man who used the instrument had to suggest some improvement, e. g., Faust,⁸⁷ Gauss,⁸⁸ Zweifel,⁸⁹ until it became quite evident to Herff⁹⁰ and others, that the new method of pelvimetry of Bylitzki, in its fundamental principle, is very similar to, if not identical with the old method of Coutouly, which has been described, in 1810, and is still kept alive in Farabeuf's pelvimeter. The one great objection against instruments of the Coutouly type always has been the fact that they necessitate considerable stretching of the vaginal wall and often cause more or less dangerous injuries. This very same disadvantage is adherent to Bylitzki's method. Bylitzki⁹¹ now tries to protect himself against the well-meant efforts of all the improvers and modifiers of his "Winkelhebel," by claiming that he does not see any advantage in trying to simplify and popularize his original set of 13 measuring bars, so as to make it practicable for general use.

Jacobson⁹² describes a "new" pelvimeter for which he makes the claim, certainly not very modest, that it "will enable the physician to measure easily, rapidly, accurately, and painlessly all the important diameters. It

will also enable him to determine the shape of the pelvis and in the presence of abnormalities, such as callus, tumor or deformity, to find exactly how much room is available." Truly, this means the ideal solution of that vexed problem of pelvimetry! But one seems justified in doubting the author's right for his claim. His instrument shows a remarkable resemblance to that pelvimeter of Wellenbergh, first published in 1831, on which all the present methods of into-external pelvimetry are based. (See a picture of the original Wellenbergh instrument in Skutsch's monograph "Beckenmessung," Fig. 45, and its description on page 69.) A summary of all the objections which have been made against this instrument can be found in this monograph. They all hold true for Jacobson's instrument, and of necessity must be more or less applicable to all instruments based upon the principle of into-external pelvimetry. Results obtained with these instruments *a priori must be inaccurate*, because it is impossible to ascertain accurately where the continuation of any internal pelvic diameter will strike the skin, and the essential principle of this method lies entirely in the assumption that this is possible.

LOWER UTERINE SEGMENT.—It certainly is remarkable that as yet it has not been definitely settled, what the generally used term "lower uterine segment" actually means. Barbour and Webster, a few years ago, examined a section through the frozen body of a woman, who had died in the second stage of labor, and they apparently furnished conclusive proof that the lower uterine segment is a portion of the uterine body, because they found cervical glands only in the lower half of the stretched and thinned segment. Very different are the conclusions arrived at by Bumm and Blumreich,⁹³ who had occasion to examine a very similar specimen. They found typical cervical glands in the whole area of that stretched and thinned segment below the very distinct contraction ring, and are positive that the lower uterine segment is the distended cervix. The contraction ring, which more properly should be called retraction ring, indicates the line of demarcation between the retracting uterine muscles and the passively stretched cervix. Hartman,⁹⁴ from interesting observations made by him in a case of deep-seated placenta, concludes that the so-called lower uterine segment is a portion of the cervix, that the contraction ring is identical with the internal os and that the primary insertion of the fertilized ovum within the cervix is possible.

Of course, much is dependent just upon this last point. Those who contend that the lower uterine segment is cervix will have to admit the possibility of a participation of the cervix in the process of nidation of the impregnated ovum. Kermauner⁹⁵ asserts that in the three cases of Weiss, Ponfick and Ahlfeld the existence of a placenta previa cervicalis has been proved beyond any doubt, and that the possibility of such a condition is strongly suggested by numerous other observations recorded in literature. He describes a fourth case in which the partial

adherence of the placenta to the cervix is established by anatomic-histologic examination of the specimen. Aschoff⁸⁶ thinks that the problem of the lower uterine segment has not been settled satisfactorily so far, because there does not exist an acceptable definition of the term cervix. Its macroscopic meaning does not coincide with its microscopic meaning, and in consideration of historical reasons and of the common practice the term should be used only in its macroscopic, clinical meaning. Cervix is the neck portion of the uterus extending from the external to the so-called internal os, that is, the region where the narrowest portion of the cervical canal ends and the uterine cavity begins. But this line is not identical—as is often wrongly assumed—with the line of demarcation between the typical cervical mucosa and the endometrium. This line lies about ten to twelve millimeters lower. This *os internum histologicum* thus is different from the *os internum anatomicum*, and the portion of the cervix lying between them should receive a special name, *isthmus* seeming most appropriate. Such a division of the uterus into three portions, viz. body, isthmus and cervix proper, would, in Aschoff's belief, speedily settle the fight concerning the lower uterine segment, which simply is the dilated isthmus, the contraction ring being identical with the *os internum anatomicum*.

MYOMA.—The numerous contributions of the past year to this subject hardly indicate any very marked change in the views of the leading gynecologists as regards the operative treatment of uterine myoma. We still meet the extremists, but fewer of them, who believe in the extirpation of every fibroid immediately on diagnosis. The majority of the writers, however, agree that temporizing under certain conditions is well justifiable, and that no hard and fast rules can be laid down concerning the indications for operation. The possible dangers of a uterine fibroid, a tumor which but a few years ago was considered entirely harmless, to-day are well understood. To a large extent we owe this advance of our knowledge to the persistent efforts of Noble, who in a recent very instructive article, summarizes the results of careful observations made by himself and a number of other writers. The fact seems worthy of note that, during the last year, several authors expressed their doubt concerning the wisdom of leaving the ovaries in cases of hysterectomy, as has been first suggested by Werth, and has become the very generally accepted rule among American gynecologists.

At the 15th International Congress in Lisbon, in the section of obstetrics and gynecology,⁸⁷ two very notable papers on the therapy of uterine myoma were presented by Martin and Tuffier. Martin traces the evolution of the treatment of fibroids since the year 1881, and then gives a clear picture of the present status of the problem. The technique of vaginal operations has been brought to a high state of excellence, the indications for these operations, however, are definitely limited. Ad-

hesions, a soft, crumbling condition of the tumor, and extreme size form the strict contraindications. Narrowness of the vagina can not be considered a hindrance because Schuchardt's paravaginal incisions can be resorted to. The primary mortality of the vaginal operations is below five per cent. They are safer, the convalescence is shorter and freer of complications, conclusions which are almost identical with those arrived at by Henkel.⁸⁸ The two abdominal radical operations are supravaginal amputation and total extirpation of the uterus. The experience gained with the total extirpation in cases of uterine carcinoma has of late led to a more general acceptance of panhysterectomy also for the myomatous uterus. The primary mortality of these operations is about five per cent. The preservation of one or both ovaries, in Martin's belief, is of little practical value.

The conservative operation, enucleation, has made slow progress in Germany. Martin does not advise this operation in elderly women, or where there is co-existing a disease of the uterine appendages, or a suspicion of malignant disease, or where numerous nodules are present. That he is, however, in favor of conservative myomectomy can be concluded from the fact that within the last six years he has performed 147 enucleations and 134 radical operations. Martin thinks that uterine discharge and profuse menstruation subsequent to conservative operations can be avoided if his mode of procedure is adopted. He first cures the uterus. After enucleation of the tumor, he opens the tumor bed into the uterine cavity and inspects the endometrium. If it is found swollen, it is resected. Then the tumor bed is closed in layers. Martin claims that 97 per cent of his patients treated by enucleation are well.

The second paper of Tuffier and de Rouville considers the treatment of uterine myoma under three headings: (1) *Medical Treatment*. It is symptomatic, directed towards the relief of pain or the arrest of hemorrhage. The electrical treatment is described at length and considered of value in certain cases. (2) *Palliative Surgical Treatment*. The rapid progress of the curative operations has left but a limited field to the palliative operations, such as curettage, ligature of the uterine arteries and oophorectomy. (3) *Curative Treatment*. It comprises hysterectomy and enucleation. The latter operation is useful in carefully selected cases, and always must be considered preferable to the radical operations. In the opinion of these authors vaginal hysterectomy has very limited indications. Supravaginal amputation on principle should be given preference over total hysterectomy. The ovaries should be left if found in a healthy condition.

Somewhat different are the conclusions drawn by Sarwey⁸⁹ from the results of 430 operations for uterine myoma performed in the gynecologic department of the University of Tübingen. Sarwey calculates the mortality of all the modern operations for fibroids as between four and five

per cent, and claims that the vaginal operations have a mortality one or two per cent larger than that of the abdominal operations, and that the mortality of the conservative operations is one per cent higher than that of the radical operations. It may be mentioned right here that Henkel,⁹⁸ in a recent article, has tried to prove that Sarwey made some errors in his calculations and that the very statistics quoted by him in fact show that the mortality of the vaginal operations is smaller than that of the abdominal operations, which seems more in accord with the views generally held. In Sarwey's opinion the best permanent results are obtained by means of a panhysterectomy which includes the extirpation of both ovaries. Sarwey approves the objections usually made against enucleation, namely, the possibility of a development of new tumors, the return of pain and hemorrhages, the chance of another operation and the possibility of a uterine rupture in the scar in case pregnancy should occur. Conservative operations should be limited to young patients who insist upon the preservation of their menstrual function and their faculty to bear children. According to Fehling¹⁰⁰ the enucleation of a single tumor through the vagina is the only form of conservative myomectomy which yields satisfactory results. The abdominal route is too dangerous for conservative operations, since the mortality of abdominal myomectomy is higher than that of abdominal hysterectomy.

Manton¹⁰¹ makes a strong plea for conservative myomectomy, an operation which, in the opinion of Noble,¹⁰² has a very limited field of usefulness. Myomectomy preserves the possibility of conception, but the probability of it is slight and in most cases the only advantage to the patient lies rather in the fact that she has left the hope to conceive. For all practical purposes, therefore, the question of pregnancy is of importance only in the comparatively small group of women who ardently desire children. Of 44 patients in whom submucous myomata had been removed through the vagina, only one became pregnant and carried to full term. Of 22 women, in whom abdominal myomectomies had been performed, two became pregnant, one miscarrying. In Noble's belief nothing is gained by leaving the ovaries in cases of hysterectomy, a view which e. g. also is expressed by Rochard.¹⁰³ Rather radical is the position taken by Reed¹⁰⁴ in a paper read at the meeting of the British Medical Association in Toronto. The only cases in which there may be any doubt whether operation should be performed or not are those in which the tumor does not cause hemorrhage, or exert pressure or present evidence of either infection or malignancy, or that has ceased to grow, and in which some condition, not connected with the tumor itself, makes operative interference the more dangerous policy. But after all: "The only safe place for a fibroid of the uterus, however small or large, however soft or hard, however recent or old, is the outside of the patient's body." And just to show how unsettled the question of operation of myoma is,

I may be permitted to quote here a sentence taken from the article of Pellanda,¹¹² a French writer, who investigated the causes of death of 171 patients who died from complications resulting from uterine fibroids. It reads: "The surgeon is more dangerous than the tumor."

A suggestion of Dorsett¹⁰⁵ concerning an improved technique of supra-vaginal amputation is worthy of consideration. He unites the severed ends of both round ligaments and sews them to the posterior portion of the remaining cervix before the whole stump is covered with peritoneum. This fixation of the cervical stump in a good position will undoubtedly help to prevent a sacculation into the vagina of either bladder or rectum. one of the not uncommon after-effects of a subtotal hysterectomy.

Noble, in 1901, first suggested the study of the question of degenerative processes in uterine fibroids on consecutive series of cases, as handled by one man or in one clinic. His suggestion has been accepted and during the last few years, by twelve writers, such successive series of cases have been detailed. Including his own series of 337 cases, Noble was thus enabled, in a recent article,¹⁰⁶ to base most valuable and reliable conclusions concerning the real nature of fibroids, their complications degenerations and the dangers caused by them on a total of 2274 carefully observed cases of uterine fibroids.

Noble summarizes in a table the observations of the various authors: 1553 cases, i. e. 68 per cent, showed a complication of some kind, certainly a formidable figure, and there cannot be any doubt that this figure still is too small, since many of the cases recorded in this table date back to a time when it has not been the custom to record every complication. The total number of 2274 cases contains 43 cases of a complication with a carcinoma of the uterine body (1.8 per cent) and 16 cases of cervical cancer (0.7 per cent), a fact which, in Noble's opinion, proves that myo-fibroma favors the development of a corporeal cancer. Sarcoma was present in 34 cases, i. e. in 1.4 per cent, a figure in all probability too small, since Winter has shown that when all nodules contained in a myomatous uterus are examined microscopically, a sarcoma is found in about 4.3 per cent of the cases. Thrombosis, embolism and phlebitis are complications which are encountered more frequently in connection with fibroids than with any other known condition. Fibro-cysts occur in about 2.5 per cent of the cases. Besides these degenerative processes, there are a number of conditions, the secondary results of fibroids, which lead to fatal termination in a definite percentage of the cases without operation. Such conditions are: anemia, injurious pressure exerted by the tumors on the urinary organs, renal and cardiovascular complications. The old view that the menopause has a beneficial influence upon fibroids today should be replaced by the conviction that its influence is rather dangerous. Small tumors may disappear after a pregnancy, but this certainly is a rare occurrence. Partial obstruction of the bowels from

uterine fibroids is relatively common. Women who have fibroid tumors often are sterile. Olshausen has figured that among 1731 married women with uterine fibroids 520, i. e. 30 per cent, are sterile, but the true percentage probably is smaller, since, 'obviously, sterility brings a larger number of these patients to the gynecologists. In addition to the deaths which would ensue from the degenerations in the tumor and from co-existing complications in the uterus, out of the total number of 2274 cases in 252, certain complications were present outside of the uterus, mostly in tubes and ovaries, many of which would have proved fatal without operation. In this way Noble estimates a probable mortality of 11 per cent for the mixed series of cases, of 15 per cent for his own cases, alone from complications outside of the tumor and the uterus. In spite of these recognized dangers, Noble is willing to accept the tradition of the profession in reference to small tumors which do not cause any symptoms. He advises an expectant treatment for them, "with considerable doubt as to its justification." The present mortality of all radical operations averages 2.26 per cent. In comparing this figure with the prospective mortality without operation of from 15 to 20 per cent from degenerations and complications within the tumor and uterus, with the addition of another 11 per cent mortality from complications outside the uterus, or a total mortality of about 30 per cent, very little doubt seems left that the prompt removal of the growth is the safer policy.

Winter¹⁰⁷ has met with 12 cases in which a uterine fibroid was complicated with a corporeal cancer, but in only four of these cases the diagnosis had been made previous to operation. The possibility of a cancer developing in the cervical stump cannot be considered a just cause of pleading in favor of total hysterectomy. A sarcomatous degeneration is a more common complication. He found it in 3.6 per cent of his patients suffering from a myoma. It is interesting to note that out of his 27 cases of sarcoma only in one the diagnosis has been made before operation. But even this experience cannot induce him to plead for the extirpation of every myoma.

Uterine fibroids are very common, so is cancer of the uterus, and since the maximum of frequency in relation to age is very nearly the same in both growths, it cannot be a matter for surprise that they should frequently co-exist. This is the way in which Bland-Sutton¹⁰⁸ argues against the assumption of Piquand and others, that fibroids actually predispose the development of uterine carcinoma. It is to be deplored that the histories of the eight cases of this complication, observed by the author, do not indicate how often, if at all, the existence of the carcinoma was recognized before operation. Bland-Sutton only mentions the fact that when cancer of the uterine body arises in a patient who does not cease to menstruate at the normal age "it is extremely liable to be overlooked."

The statement of Winter and others, that the complicating carcinoma

or sarcoma so very rarely is diagnosed or even suspected, I do not find properly appreciated by either those who write in favor of conservative myomectomy or those who vigorously object to this operation. In view of such facts it seems to me that one would be justified in doing an enucleation only after the histologic examination of a piece of cervix and of the scrapings of a thorough curettage have failed to reveal any signs of malignancy. But even this mode of procedure would not furnish absolute protection, especially in cases of a sarcomatous degeneration. I, therefore, believe that Cullen's suggestion should be generally accepted. He¹⁰⁹ advises strongly to examine the uterine mucosa and every myomatous nodule immediately after operation in order to exclude malignancy or to be enabled to speedily perform another radical operation if this examination discloses the presence of a never-suspected malignant degeneration.

A tuberculous infection of a uterine myoma undoubtedly is an occurrence of extreme rarity. An observation of this condition is described by Dickson.¹¹⁰ It is according to his statement the only case recorded in literature. But already a very similar case of a tuberculous infection of an adenomyoma has been described by Archambault and Pearce.¹¹¹

ROENTGEN RAYS.—A novel method of conservative treatment of uterine fibroids consists in the application of Roentgen rays. The following interesting history of the development of this new therapy is given by Goerl.¹¹³ The observation of Albers-Schoenberg, published in 1903, that male rabbits can be sterilized by an exposure of their testicles to the x-rays, was soon confirmed by Seldin and Heinecke. The two latter investigators detected degenerative processes in the testicles as the cause of the sterility. Influenced by these reports Tilden-Brawn examined a number of men, who, while working in factories, had been exposed to the effect of these rays. It was ascertained that the 18 workingmen who were in the employment of this factory for more than three years, had a sperma free of normal spermatozooids. Halberstaedter¹¹⁴ next established the fact that the ovaries of animals are just as susceptible as the testicles to the harmful effects of x-rays. After a comparatively short exposure macroscopically and microscopically an atrophy of the follicles became evident. The question whether an identical effect is exerted upon the ovaries of women is not as yet definitely settled. Faveau de Courmelles was the first to use Roentgen rays in the treatment of patients suffering from uterine myomas. He reported improvement in 38 cases out of a total of 45 treated in this manner. While this French writer endeavored to obtain the desired effect by the direct action of the rays upon the tumors themselves, Goerl, on the other hand, attempted a practical application of the detection of Halberstaedter. He administered the x-rays to the ovaries in the idea of obtaining secondary changes in the fibroids by a primary atrophy of the ovaries. A patient treated in this manner showed a very encouraging improve-

ment of her condition. Goerl mentions the possibility of employing the x-rays in women in whom a complicating disease, permanently or only temporarily, makes impregnation undesirable. Specht,¹¹⁵ in repeating the experiments of Halberstaedter on rabbits, confirms that the changes brought about by Roentgenisation affect both the follicles and the interstitial parenchym of the ovaries. He emphasizes that the atrophy is not the result of any alteration of the capillary vessels, but is due to the direct influence of the rays on the cells themselves. Fellner and Neumann¹¹⁶ thought that these atrophic changes in the ovaries, if produced during pregnancy, should exert a distinct influence upon the further development of the fertilized ovum, if the contention of some writers is true, that certain functions of the ovaries during pregnancy control the growth and development of the ovum. They experimented on 15 pregnant rabbits and concluded that the Roentgenisation of the ovaries during the first half of pregnancy, even when the uterus was carefully protected against the rays, caused a retardation or cessation of the further development of the ovum. The ovaries in all instances showed a marked degeneration of both the follicles and the interstitial parenchym and in this manner, in the opinion of these investigators, their internal secretion is interfered with and secondarily the harmful effect upon the progress of pregnancy brought about. Experiments made by Lengfellner¹¹⁷ on pregnant guinea pigs near the end of pregnancy show that x-rays apparently have a deleterious effect upon the fœti in the uterus. These observations and the findings of Fellner, if confirmed by further experiments, in my opinion, would be of eminent practical importance in view of the fact that various attempts have been made to use the x-rays in women for the diagnosis of intra-uterine and extra-uterine pregnancy¹¹⁸ and for the purpose of pelvimetry.

Ascarelli¹¹⁹ reported to the Medical Society of Rome the case of a woman of 38 years with a puerperal osteomalacia cured by the application of Roentgen rays. Ascarelli is convinced that the ovaries in this case had become atrophic from the effect of the rays.

OVARIAN GRAFTING.—The impetus for experiments with transplantation of ovarian tissue was furnished by two factors: by annoying nervous symptoms which often follow artificial menopause and by the observation that small rests of ovarian tissue, left after operations, may hypertrophy and continue to functionate normally. We differentiate two modes of ovarian grafting, the autoplasmic and the heteroplasmic, also called homoplasmic. The first mode consists in the transplantation of ovarian tissue of the same individual into another more suitable place. Autoplasmic grafting has been done more or less successfully in animals and also in human beings. Of a more recent date are the attempts at heteroplasmic grafting. The energetic efforts of Morris of New York along these lines of work seem to have been crowned by a most interesting practical result. He records¹²⁰

the case of a woman who gave birth to a full-term child four years after the ovaries of another woman had been transplanted into her broad ligaments. Morris duly emphasizes that only the removal of the ovaries with the angiotribe gives a guarantee that all ovarian tissue has been removed and excludes the possibility of a deception by an unintentional autoplasmic grafting. It is, however, striking that Morris does not mention the other possibility of a deception, namely, the presence of a third ovary. Unimpeachable cases of this sort have been recorded, and Manton¹²¹ only recently has added a new case to the five mentioned by Seitz.¹²²

It is undoubtedly true that the result of an ovarian graft is to a very large extent dependent upon the mode of operation. This point is at length discussed in a paper of Cramer,¹²³ in which he records two cases of heteroplasmic grafting. Following a suggestion of Professor Ribbert, who had shown that the central portion of a transplanted ovary as a rule becomes necrotic, Cramer dissected off the stroma portion and transplanted only the cortex. One patient began, subsequent to this operation, to menstruate regularly after an amenorrhoeic period of a year and a half. A very good resumé of all the work so far done in ovarian grafting is presented in an article of Pankow.¹²⁴ Five of his cases of autoplasmic transplantation showed some improvement in their condition thus apparently proving the continued function of the ovaries transplanted into a peritoneal duplication between bladder and uterus. Two attempts of heteroplasmic grafts made in women castrated two and three years before, proved failures. In experiments on animals Basso¹²⁵ found that in heteroplasmic transplantation the ovary first passes through a period of degeneration due to insufficient nutrition, followed by regeneration when the newly formed capillaries have established the connection with the blood vessels of the surrounding tissue.

CARCINOMA.—If it would seem at all permissible to speak of progress during the past year in regard to the cancer problem, it certainly could be done concerning the efforts to bring this class of patients early into the hands of the skilled physician by disseminating widely among physicians and laity a better knowledge of the earliest symptoms of uterine cancer. Although Duehrssen¹²⁶ claims the priority for this idea, we undoubtedly owe it to the persistent work of Winter in this direction, that the advisability and the striking advantages of such a systematic propaganda today are generally recognized and appreciated. Winter has demonstrated that these efforts in various parts of Germany have led to a distinct increase in the number of those sufferers from uterine carcinoma who present themselves to the general practitioner and the gynecologist in an early stage of the disease, and that this growth of the percentage of operable cases has been followed by a corresponding improvement of the permanent results of the modern cancer operations. During the past year the medical profession of France, Austria and Italy have taken up the fight against carcinoma

along the same lines, and with satisfaction we can point to the fact that a beginning has also been made in our country. A "Committee on Cancer of the Uterus," appointed by the American Medical Association, has submitted a report¹²⁷ which will be distributed broadcast among the physicians and should be most carefully perused. But experience in Germany has clearly shown that such a propaganda becomes truly effective only if the interest of the public at large is aroused by a very cautious use of the lay press in this campaign. Therein most probably will lie the greatest difficulty in this country. Extreme care will have to be exerted to prevent the yellow journals from appropriating this serious problem as a welcome topic for sensational articles and as an inducement to solicit more and larger advertisements from the numberless exploiters of fake cancer cures.

Various phases of the cancer problem have been interestingly discussed before the section of obstetrics and gynecology at the last meeting of the A. M. A. in Boston. Clark,¹²⁷ in dealing with the early diagnosis, lays stress upon the necessity of revising some of the antiquated ideas concerning the etiology and symptomatology of uterine carcinoma. The usual clinical examination, if carefully made in every case, almost invariably proves sufficient in establishing the diagnosis in cervical cancer.

The two radical abdominal operations almost generally practised today are those developed by Wertheim and Mackenrodt, the former undoubtedly enjoying an ever-increasing popularity. Brunet,¹²⁸ a pupil of Mackenrodt, advances some good arguments in favor of abdominal operation in general and of that invented by his former chief in special. He bases his deductions upon the results of the extensive investigations, which of late have been made concerning the successive advance of a cervical cancer toward the surrounding lymph glands. Brunet, in this article, also tries to prove that at present the primary mortality of the extensive abdominal operation is but very slightly greater than that of the vaginal method. Cullen, in a signed editorial,¹²⁹ expresses the opinion that the time for vaginal operations has passed and that they are permissible and preferable only under special conditions. The abdominal should be the route of choice. He employs at present the Wertheim method, but he is inclined to believe that in future possibly Mackenrodt's operation may be given preference. The transverse horse shoe incision of the latter gives a better exposure of the field of operation and thus shortens the duration of the operation. The most interesting contribution to the question of the Wertheim operation comes from Wertheim himself,¹³⁰ who summarizes the condition of 180 of all the patients operated by him. Of these, at the time of the report, 60 were free of recurrence more than five years, 60 more than four, and the last 60 more than three years. In his own hands the operation now has a primary mortality of only 9 per cent. A most noteworthy summary of results obtained with this opera-

tion in the gynecologic clinic of the University of Graz (Austria) is presented by Schindler.¹⁸¹ From 1899 to 1904 a total of 588 patients suffering from a uterine carcinoma were seen, of whom 400 entered the hospital. Of these 193 (48.25 per cent) were operated upon. The abdominal Wertheim operation was performed in 117 instances, with a primary mortality (including all deaths) of 13.67 per cent. At the time when this paper was prepared concerning 81 of the operated patients, some information could be obtained, from one to five years having passed since the operation. Nine had died, four apparently from intermittent diseases, for the other five the cause of death being unknown. The percentage of absolute cure is 5 per cent (of the 400 patients admitted to the hospital) or 2.65 per cent of all the 588 cancer patients seen in the clinic. Of all the patients in whom at the time of operation carcinomatous metastases were found in lymph glands, only one was found still free of a recurrence. Taking into consideration only those cases which were operated upon more than five years ago, the absolute cure amounted to a little more than 4 per cent of all cases admitted to the clinic. The results, in Schindler's opinion, are not very satisfactory. This is, however, undoubtedly to a large extent due to the fact that in the clinic of Graz on principle, preference is given to the vaginal operation of Schuchardt, while the operation of Wertheim is reserved only for the cases in which the carcinoma apparently has invaded the parametrium, and lymph glands probably are involved. Schindler's statistics thus are based almost entirely on unfavorable cases.

Rosthorn, of Heidelberg, who attended the Boston meeting of the A. M. A. in a most excellent paper¹²⁷ dwelt in detail almost on every point of interest and importance in the cancer problem. He defended the abdominal operations as the only which are rational, since they certainly permit the eradication of the parametria in the most radical manner. Glands should be removed in every case as thoroughly as possible, and in case of recurrence another attempt should be made to either save or at least prolong the patient's life by a new operation. It is very interesting to note that most of the speakers in the discussion at the Boston meeting were heartily in favor of the abdominal route. A year ago at the meeting of the American Gynecological Association¹⁰² practically all speakers expressed a preference for the vaginal operation.

While there is a general consensus of opinion concerning the necessity of a thorough removal of the parametria, opinions are still divided in regard to the removal of the lymphglands. Clark,¹⁸³ once one of the strongest advocates, in fact one of the originators of the routine extirpation of the pelvic lymphglands, to-day states: "My own conclusion, although very reluctantly reached—for I had hoped for decided improvements in permanent results—is, that we lose more than we gain in the radical operations when the lymphglands are painstakingly extirpated,

and to remove here and there a palpable enlarged gland will certainly not promote the patient's interests, so far as a radical cure is concerned. My own rule, therefore, is to remove one or more glands for microscopic examination, provided they are palpably enlarged and easily accessible. If metastasis is found, the prognosis is inevitably bad." Clark's present mode of procedure consists in the extirpation of the uterus with the upper portion of the vagina and the surrounding connective tissue by means of the cautery. Emil Ries¹²⁷ warns against this "conservative radicalism." In his belief the giving up of the routine extirpation of all lymphglands by Wertheim and his followers easily accounts for the fact that modern "radical" operations have an ever decreasing primary mortality. But this new tendency of removing just a few glands here and there or none at all, marks a step backward. The present Wertheim operation in Ries' belief is little else but an abdominal operation after Freund with the addition of the dissection of the ureters. Ries' original idea of a proper operation for uterine carcinoma differed from all former operations of this kind in that he tried to apply to it the principle now generally adopted for all cancer operations; that is, to remove the regional lymphglands. It hardly can be denied that the various modifiers of the original Ries operation have lost sight of the underlying original feature of this operation and thus Ries seems well justified in his complaint that the present abdominal method will tend to discredit the movement started by him. "The permanent results by such half-way measures can be expected to be only slightly better than those of the old hysterectomies."

According to Veit¹²⁸ sepsis is one of the chief causes of the high immediate mortality of the extended abdominal operations, followed next in importance by the deleterious effect of a prolonged anesthesia upon a weakened heart in advanced cases. He thinks that these two causes could be almost eliminated by the prophylactic use of the antistreptococcus serum (10 to 20 ccm. injected before operation), and by substituting medullary anesthesia with stovain for a general narcosis.

Concerning the vaginal operation for uterine carcinoma it must again be stated that American writers still fail to appreciate the fact that German writers in speaking of the vaginal operation refer only to the Schuchardt operation, the only vaginal operation which permits the extensive extirpation of the parametria. The extirpation of the cancerous uterus without removal of the parametria, in view of our present knowledge, falls but little short of malpractice. Attention, therefore, is called to an article of Sir William Sinclair,¹²⁹ because, to my knowledge, it is the first clear and detailed description in the English language of the so-called Schuchardt operation, a vaginal hysterectomy facilitated by deep paravaginal incisions. That Duehrssen¹³⁰ also claims priority for this operation may be stated in this connection. Some gynecologists perform this operation entirely with the cautery and apparently obtain extremely

satisfactory results. This vaginal cautery operation is, e. g., the operation of choice in the clinic of Chrobak in Vienna, since 1900. The results of 309 operations performed in this clinic since 1890 are described by Blau.¹³⁷ This figure includes 196 cases of simple hysterectomy with the cautery, and 113 cases of igniextirpation with paravaginal incision. The primary mortality was 5.8 per cent. At the time of the writing of the paper information could be obtained concerning 291 patients, of whom were alive 244. Of those operated upon more than five years ago, 25 per cent of the cervical cancers, and 77 per cent of the corporeal cancers, or an average of 30.4 per cent of all patients were free of recurrence. The percentage of absolute cures is 5.64 per cent of all cancer patients seen from 1890 to 1903 in the service of the clinic. Of course, no definite results can be given concerning the 113 vaginal igniextirpations with Schuchardt incision performed from 1900 to 1903, but the following interesting facts may be recorded: The immediate mortality (including all deaths) was 6.19 per cent. Only in five instances adjoining organs were injured. The operability has risen to almost 33 per cent (which, however, is still far distant from the operability of 82 per cent obtained by Winter, undoubtedly as the result of his personal propaganda). Considering only those 31 cases, in which the complete Schuchardt operation has been performed with the cautery more than five years ago, the percentage of absolute cures has risen to the unexcelled figure of 45.8 per cent. Certainly a splendid success of a vaginal method. Kuestner's clinic in Breslau for the last two years has adopted the Wertheim method, but just this fact has induced Hannes¹³⁸ to investigate what has become of the patients previously operated upon by the vaginal method. Calculated according to Wertheim he found a permanent cure of 28.8 per cent. This again is a figure which hardly justifies the claim that the time for vaginal methods has passed.

Important contributions have appeared concerning the lymphgland question. Cigheri¹³⁹ draws interesting conclusions from his extensive investigations made in the gynecologic institute of Pestalozzi. As a rule a lymphgland infection does not occur before the parametrium is invaded. Cancers developing from the cylindrical epithelium of the cervical mucosa usually cause metastases earlier than carcinomata of the portio or the corpus. Sitzenfrey¹⁴⁰ supports the views of Meyer and Brunet concerning the peculiar epithelial ducts at times found in the lymphglands of patients suffering from a uterine cancer. Meyer first had claimed that these are lymphvessels or lymphducts in which the endothelium had proliferated. They both thought that this proliferation is the result of a chronic irritation. Sitzenfrey now adds the interesting new information that in all cases of uterine cancer in which these epithelial ducts are found in the glands, there are always evident the signs of a chronic inflammation of the uterus, its appendages or the peritoneal covering. These epithelial

ducts often very closely resemble carcinoma and often can be properly diagnosticated only by dividing the whole gland in serial sections. These ducts may actually form the basis for the development of a neoplasm. In his belief it is possible that some of the obscure retro-peritoneal cysts containing a ciliated epithelium may have arisen from such epithelial ducts of chronically inflamed lymphglands. They also may give rise to the development of a lymphangio-epithelioma.

Of unusual interest and probably practical importance are the results of Frommer's¹⁴¹ investigation into the clinical and pathologic-anatomic behavior of lymphglands in cases of malignant growths, especially of cervical cancer. In these cases fever is a very common occurrence. After a critical consideration of all the various ways in which this rise of temperature has been explained he comes to the conclusion that it must be due to the entrance of bacteria into the blood. On their way from the carcinoma to the blood these microorgans have to pass through lymphglands. If in a diseased condition they probably will offer but little resistance to their passage. Microorganisms always can be found in the regional glands. They produce certain alterations of the surrounding tissue and at times lead to a partial necrosis of the gland. The result of the bacteric infection of the gland may be the formation of granulation or new connective tissue. An additional cause for the formation of such tissue probably is also furnished by toxic substances produced in the neoplasm. This formation of new connective tissue must, however, be looked upon as a beginning of spontaneous cure, since glands, affected in this manner certainly form a greater obstacle against the further progress and distribution of the cancer. The newly formed tissue may lead to a secure encapsulation of a gland already infected with carcinoma and result in necrosis and final obliteration of this gland. An important role in the destruction of the cancer toxins within the gland is played by the eosinophiles and the mast cells, especially by the latter because they propagate the proliferation of the connective tissue. According to the investigations of Frommer these mast cells develop from the adventitia of the small vessels.

BILATERAL OVARIAN CARCINOMA.—In a large number of instances a carcinoma which affects both ovaries in fact is the metastasis of a primary carcinoma in some other organ. In order of their frequency, Amann¹⁵¹ ranges the primary growths as follows: Carcinoma of the stomach, uterus, breasts, skin, intestines, gallbladder and suprarenal glands. In most cases in which the primarily affected organ lies within the abdominal cavity the infection of the ovaries probably is due to a direct contamination with carcinomatous tissue which has entered the peritoneal cavity after the primary growth in its progress has reached the peritoneal covering of the affected organ. In other cases the dissemination occurs by way of the lymph and blood vessels. A careful ex-

amination of all abdominal organs prior to the operation of every ovarian carcinoma, especially if bilateral, is of extreme importance. Of course, the responsible primary tumor may be so small that it may escape detection. This point of the necessity of a most painstaking search for a primary growth is also emphasized by Stickel,¹⁴² who in 13 cases of metastatic ovarian carcinoma found the primary growth in the stomach nine times, in the breast three times and in the ascending colon once. The metastases in the ovaries may be detected at a time when no enlarged lymphglands can be palpated. Bland-Sutton¹⁴³ is inclined to believe that the majority of all bilateral solid ovarian tumors are carcinomatous, and, as a rule, are metastatic formations. In women who died of gastric cancer in at least 10 per cent of the cases, metastases are found in the ovaries. The theory that in many of these cases particles of carcinomatous tissue which have entered the peritoneal cavity, have been carried directly to the ovaries, has induced Kraus¹⁴⁴ to investigate the permeability of the germinal epithelium for corpuscular elements. The results of his experiments furnished important proof in support of this theory. A new series of experiments made by Wolfheim¹⁴⁵ leads to results slightly at variance with those of Kraus. Wolfheim found that the intact germinal epithelium positively prevents the ingress of corpuscular elements into the ovarian stroma, that, however, even the physiologic rupture of the Graafian follicles disturbs this integrity, and actually permits such elements to invade the stroma.

Of late with increasing frequency, reports have appeared of cases in which a malignant growth developed in abdominal scars after the removal of apparently benign ovarian tumors. The question arose whether particles of a benign ovarian growth could after implantation lie dormant in the abdominal wall for a long while and then suddenly acquire a malignant character. This question is of eminent biologic and practical interest, and is by Polano¹⁴⁶ answered in the affirmative. In his opinion malignant degeneration occurs in some instances, while for others the following three explanations can be given: The ovarian tumor may have been malignant, at least partially. An exact and thorough examination of large ovarian tumors is impossible. A primary cancer, lying unrecognized somewhere in the abdomen, may lead to metastases in the abdominal scar. Or, a carcinoma may arise primarily in the abdominal walls, originating from remnant tissue of the urachus or the vitelline duct.

ATONY OF THE NON-PREGNANT UTERUS.—The question whether the non-pregnant uterus during a curettage or even solely due to the introduction of a uterine sound can relax and become atonic has of late led to a rather interesting controversy among some of the leading continental gynecologists. A history of this dispute is given by T. Hurst Maier.¹⁴⁷ It first began between Kossmann and Strassman, the former reporting two cases of uterine paralysis observed during curettage of non-pregnant uteri, the latter contending that this is impossible and declaring that

Kossmann's observation is not one of paralysis but of unintentional instrumental perforation of the uterus. Kossmann then tried to prove that an atony may occur in a non-puerperal uterus just as well as in the puerperal organ. During a dilatation or curettment one has only to measure the length of the uterine cavity just before and immediately after dilatation, to convince himself that its length has increased from one to two centimeters. This phenomenon is due to a relaxation of the tonus of the musculature. According to Schaeffer the relaxation is a response of the whole uterine muscle to the irritation of the internal os. The result may be one of the two; a limited relaxation and distention of the wall in which the elastic consistency of the wall is still almost normal, or a complete atony which transforms the uterine body in that thin walled, flaccid sac of which Kossmann speaks. Besides the contribution of Schaeffer those of Van Tussenbroek have unquestionably demonstrated the correctness of Kossmann's contention. Tussenbroek¹¹⁸ in certain aspects modifies the views of Schaeffer and contends that the tone relaxation of the afferent vessels, occurring coincidentally with the tone relaxation of the uterine musculature, results in an increased blood supply to the relaxed uterus. The tortuous blood vessels straighten out from the increased blood pressure. Thus the whole uterus swells like an erectile organ. If now for certain reasons the congestion disappears before the muscles have regained their tonus, the uterine wall loses its tension and the condition becomes one of complete atony. Maier, since his attention has been called to this possibility, has observed several clear cases of atony of the non-puerperal uterus. Asch¹⁴⁰ thought that the paralysis of the uterine muscle in most instances is due to the effects of the general anesthesia, but this theory is vigorously objected to by Kossmann¹⁶⁰ and Tussenbroek. In this connection mention can be made of a recent paper of Kurdinowski¹⁶¹ in which he shows that chloroform does not have a paralyzing effect even on the puerperal uterus as is so generally assumed. Tussenbroek in a previous article¹⁶² has clearly brought out the practical side of this problem, proving that this sudden change in the tonus of the uterine muscle during curettment forms a factor of no small importance in the etiology of instrumental perforation. Of interest in this connection also is a paper of Fellner¹⁶³ in which he describes the nerves which regulate the contractions of the uterus. The tonus of the uterine musculature is preserved by the action of the *Nervus erigens* and the *Nervus hypogastricus*. A prolonged mechanical irritation during dilatation and curettment results in a fatigue of these nerves and a consequent relaxation of the muscle. Fellner, like Schaeffer and Tussenbroek, differentiates between the atonic relaxation with preservation of some of the tonus and complete relaxation. In a very convincing way he explains these two conditions by means of his nerve theory.

MALPOSITIONS.—In a most ingenious manner E. C. Dudley¹⁶⁴ employs

the broad ligaments in a vaginal operation for prolapse. After having pushed back the bladder he severs the lower third of both broad ligaments and unites the cut ends in the middle line in front of the cervix. This procedure pushes the uterus backward and upward and certainly must help to hold the organ in this better position. In a similar way he unites the stumps of the broad ligaments after supravaginal hysterectomy in order to gain a stronger vaginal roof. The fact deserves to be stated here that this certainly is one of the best illustrated articles which has ever appeared in a medical weekly. The excellency and clearness of these illustrations, executed in two colors, reflects creditably upon the present make-up of the *Journal of the Am. Med. Association*.

(Based upon the results of Mackenrodt's investigations of the anatomy of retroflexion, Alexandroff in 1903¹⁵⁵ has described an operation for retroflexion in which he, like Dudley, unites the lower portions of both broad ligaments in front of the cervix, however, without first dissecting off these portions from the cervix.)

The possibilities for using the round ligaments in the correction of a uterine retroflexion seem exhausted. New operations continually are described, but it seems difficult to recognize the minute differences in technique between them and the methods used by others. Montgomery¹⁵⁶ describes in a well illustrated article a modification of the operation first practised by Gilliam and later improved by Simpson. He carries a loop of the round ligament through the broad ligament between its folds beyond the peritoneum, when it is brought through the abdominal wall and secured upon the aponeurosis. This operation is also practised by Fisher.¹⁵⁷ C. H. Mayo¹⁵⁸ describes the method in use in Rochester. It is the same operation differing only in the following detail of technique: Mayo introduces a curved forceps or a Cleveland ligature carrier from the aponeurosis along the round ligaments into the peritoneum to grasp the round ligaments, while Montgomery carries the loop from within outward. Very similar, if not identical, is a "new method of uterine ventrofixation" invented by Casalis.¹⁵⁹

Reuben Peterson¹⁶⁰ shows that both round ligaments can be shortened within the inguinal canals through a single suprapubic incision, made either transversely or in the median line. The obvious advantage of this operation lies in the fact that thus a laparotomy can be combined with the bilateral shortening of the round ligaments according to Alexander-Adams without necessitating three separate incisions through the skin.

A very instructive paper of Watkins¹⁶¹ on operations of large uterine prolapses establishes the interesting fact that the so-called Wertheim-Schauta operation, for which also Duehrssen claims priority, more properly should be known as the Watkins operation.

NEW BOOKS.—Winckel's *Handbuch der Geburtshilfe* and Martin's *Krankheiten des Beckenbindegewebes und Beckenbauchfelles* have been

completed, two monumental works, which present every feature of the respective subjects with that minuteness and thoroughness in which German authors easily outrank all the scientific writers of the civilized world. In a series of three volumes, published by Lea Brothers & Co. and called the Practitioner's Library, a Practice of Gynecology has appeared under the editorship of Boveé and a Practice of Obstetrics edited by Reuben Peterson. Pozzi's *Traité de Gynécologie*, known the world over in its numerous translations, is appearing in its fourth edition, the first volume having so far been published. Schauta, who several years ago has made an attempt to deal with obstetrics and gynecology conjointly in one work, in a new edition adopts the modern idea of presenting these subjects separately. The first volume of his work, devoted entirely to obstetrics, has appeared. One of the most beautifully illustrated volumes extant is a presentation of the technique of vaginal operations by Wertheim and Micholitsch. It would seem impossible, but the illustrations of this atlas actually surpass in clearness and beauty even those of Kelly's *Operative Gynecology*, which has appeared in a second revised and enlarged edition. The necessity for new editions of the textbooks of obstetrics of Hirst and Edgar and the gynecology of Ashton proves the popularity these works are at present enjoying among teachers and students.

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LIST OF ABBREVIATIONS USED:

- A.—Abstract.; n.—Number; p.—page; v.—volume.
- A. de G.—*Annales de Gynécologie et d'Obstétrique*.
- A. f. G.—*Archiv. fuer Gynaekologie*.
- A. J. o. O.—*American Journal of Obstetrics*.
- A. J. o. S.—*American Journal of Surgery*.
- A. o. S.—*Annals of Surgery*.
- B. Ac. m. Par.—*Bulletin de l'Académie de Med. de Paris*.
- B. J. H. H.—*Bulletin of Johns Hopkins Hospital*.
- B. J. o. O.—*Jour. of Obstet. and Gynecology of British Empire*.
- B. kl. W.—*Berliner klinische Wochenschrift*.
- B. m. J.—*British Medical Journal*.
- C. o. M.—*Courier of Medicine*.
- D. m. W.—*Deutsche medizinische Wochenschrift*.
- Hg. B.—*Hegar's Beiträge zur Geburtsh. und Gynaekologie*.
- Int. M. J.—*Interstate Medical Journal*.
- J. A. M. A.—*Jour. of Americ. Med. Association*.
- Lanc.—*Lancet (London)*.
- M. f. G.—*Monatschrift fuer Geburtsh. und Gynaekologie*.
- M. m. W.—*Muenchner medizinische Wochenschrift*.
- M. Rec.—*Medical Record*.
- N. Y. M. J.—*New York Medical Journal*.
- S. G. O.—*Surgery, Gynecology and Obstetrics*.
- V. kl. V.—*Volkman's klinische Vortraege*.
- W. kl. W.—*Wiener klinische Wochenschrift*.
- W. m. W.—*Wiener medizinische Wochenschrift*.
- Zb. f. G.—*Zentralblatt fuer Gynaekologie*.
- Zs. f. G.—*Zeitschrift fuer Geburtsh. und Gynaekologie*.

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NEUROLOGY AND PSYCHIATRY.

IN CHARGE OF

SIDNEY I. SCHWAB, M. D.

A consideration of the literature of neurology and psychiatry of the year 1906 shows that the activity in point of production has suffered no diminution over that of previous years. An immense amount of work has appeared in printed form and the task of the reviewer grows more difficult as the effort is made to be more critical and judicious in the selection of papers to be mentioned in a review as limited as this is compelled to be.

Upon closer examination, however, certain general tendencies can be observed which even in one year's work make themselves manifest. By attempting to follow these tendencies certain subjects seem from year to year to attract the worker in neurology and psychiatry with an un-failing interest that is somewhat remarkable.

It is unfortunate, that in many instances, the points at issue are such that they can not be solved by any sort of dialectic writing and for that reason there is apparently a waste of effort which is burdensome to the mass of literature and to the readers of each year's output. It is too often the case that there is brought forward, as proof of this or that hypothesis not more than the writer's personal bias, unsupported by any convincing proof. That such work must each year be read, points to the necessity of some critical agency through which all this unnecessary product can be filtered. A Centralblatt on neurology and psychiatry with the critical feature strongly accentuated, is one of the present needs which is here strongly emphasized.

There seems to be ever ready at hand for the neurologists or psychiatrists, especially the latter, a tendency to the argumentative style of writing which is supplanting the record of patiently acquired facts. This is especially to be seen in papers appearing from the pens of what are termed the leaders on these subjects. They frequently scorn methods of clinical research and allow themselves to advance or support certain views which are supposed to be accepted simply because they emanate from names that carry a degree of authority. The dementia praecox question is an instance in point. On this subject an analysis of the papers show, with one or two exceptions, merely discussions on the classification feature of this disease. The psychiatrist seems to fight as shy of clinical facts as the neurologists are eager to make use of them. A return to the methods of clinical description is much to be wished for and this will probably come about when the neurologist and the psychiatrist see in their respective subjects no necessary line of demarkation.

In the review of last year it was deemed advisable to divide the subject into several groups in order to make the selection of papers easier. In this year's paper the following division will be observed:

1. Studies relating to the Anatomy, Physiology and Pathology of the central nervous system.
2. Papers relating to case reports, clinical statistics, and other clinical data.
3. Newer methods of therapy and new methods of clinical and laboratory diagnosis.
4. Brief consideration of notable text books and monographs.

There has been an immense amount of activity in the study of the anatomy of the nervous system. The consideration of the nerve cell and the neuroglia and the closely related question of autogenetic regeneration of peripheral nerves have attracted the greatest attention. The old question of the neuron doctrine treated in a more or less metaphysical way has given place to papers more or less experimental in nature which have for their object the acquirement of facts upon which a theory of nerve action will finally be based. An interesting departure to be noted this year is the appearance of papers dealing with the gross anatomy of the nervous system, a part of nervous anatomy which previously has been neglected. A good example of this sort of paper is Bramwell's¹ work on the recognition of segmental levels from the appearance of transverse sections. He attempts to provide a means of determining the level of the cord independently of the nerve roots. As these latter are so apt to become misplaced or destroyed during the post-mortem manipulation, the value of this simpler and more exact method can be readily seen. Economo² has written a timely article on the normal anatomy of the nerve cell. He has taken only the most recent work as a basis, and has attempted by means of a comparative study of different methods to establish some kind of procedure that shall be definite and more or less constant. He chooses for the unit of study, so to speak, the spinal cord cells. He began with Bethes' methods and notes the anatomical pictures so obtained. The details of the cell, the method of ending of the axis cylinders, the Golgi nets, the method of cell aborization and other points in relation to the cell and the termination in respect to the neighboring cell are thus studied by the technique of various investigators. The results are compared and the probable true appearances are then deduced. In this way some of the most important points in the disputed questions of nerve cell anatomy are considered. The paper can be said to be of importance, although the conclusions obtained have no sort of permanent value. The question of the value of the myelogenetic fields of the cortex of which of course Flechsig has been the warmest advocate, has been the subject of almost continuous study by O.

Voigt.³ Each year there appear papers by him or his students from his institute devoted to "Gehirn Forschung," in Berlin, which in many respects set a standard for work of this kind. His own contributions, as well as the work coming out of his institute, have not received in this country, at any rate, the attention which they merit. His latest paper on the subject has for its thesis the assertion that the physiological development of the cortex and the anatomical field formation do not go hand in hand, as Fleschig has advocated. It is only in a sense true. He lays stress on the study of cyto-architecture, which he believes will come more nearly solving the questions in anatomy and physiology, which the cortex from a developmental point of view presents. Jaddessohn⁴ determined by the use of a careful technique that the network in the ganglion cells, which are said by Cajal and Donaggio to be a continuation of the neurofibrils, is really an artifact. He believes that the truest pictures yet obtained, are those which can be demonstrated by Bethe's method. In a communication to the Societie Neurologique, Thomas⁵ calls attention in very strong terms to the advantages of the Cajal impregnation method, that is the new method. He points out its value in the normal anatomy as well as its use in pathological examinations. He insists upon the necessity of recognizing the part played by the fibrillæ in pathological conditions.

These few introductory papers will serve to show how far from settled most of the questions in mere anatomical outline are, and how careful all conclusions derived from data obtained from the technique now in use must be scrutinized. With all the new data at hand the solution of even the least important of the questions which occupy the attention of neuro-anatomists seems as far from solution as ever. Each year the neuron question (note that we no longer say theory or doctrine) comes in for its place in this review. The best possible introduction to this part of the review will be found in a brief review of the work that has appeared on the subject of the autoregeneration of peripheral nerves. That the neuron question has a close connection with the phenomena that take place when a peripheral nerve is cut and the two ends divided and some means used to prevent their union by contact, is no longer denied. It is quite possible that the solution of this problem will carry with it the final determination of the correctness or the falsity of this doctrine. The principle of physiological method underlying most of the experiments on this question is sufficient excuse for considering them in this part of the review. In a communication to the medical society at Pavia, Peroncito⁶ presents the conclusions derived from a series of experiments on animals, in which the sciatic nerve was cut and the appearances noted at various intervals of time from twenty-four hours to ten days. He found new fibres in the central stump and fibres apparently aris-

ing from the scar twenty days after the operation had been performed. Marinesco⁷ believes that the autoregeneration phenomena studied by means of Cajal's method can be brought into line with the idea of cell unity, on which the neuron doctrine is based. The same author and Minea,⁸ in a more extensive paper, supported by a series of very carefully planned experiments, conclude that it can be demonstrated by the use of Cajal's stain that autoregeneration at the peripheral end of a divided nerve, takes place. They do not deny, however, that new cells may exercise some trophic influence upon the axon. They base their conclusions upon the following observations. 1. Presence of newly formed fibres within the cell bodies and in the protoplasmic processes of the proliferated neurilemma nuclei. 2. Presence of newly-formed fibres in the peripheral segments of nerves torn from the cord. Besta⁹ concludes that all fibres in the peripheral segment degenerate. This fact, according to him, supports the view of the pluricellular origin of the regenerated fibres. The central segment exercises probably a stimulating influence. A review of the whole subject can be obtained from a series of papers by Lugaro,¹⁰ Münzer,¹¹ Raimann¹² and Lugaro.¹³ These papers are in the nature of a discussion and answers to criticisms. Lugaro criticises Raimann's paper and experiments in which the spinal cord together with the posterior root ganglion were torn away and yet new nerve fibres were found in the sciatic nerve. He believes that no definite proof exists at present that peripheral autoregeneration really takes place. Münzer and Fischer in a series of apparently carefully planned and executed experiments do not find sufficient evidence in support of the assumption that peripherally severed nerves autogenetically regenerate. It can be seen from these contradictory accounts how far from being settled this vexed question is. Its importance consists in that it is closely related to the neuron question and any uncertainty in this phase of the problem must naturally be reflected in all discussions which have to do with the neuron doctrine. Consequently the solution of the question as far as its later conception is concerned, must wait until the data upon which it is based are more definitely proven to be actual facts. The study of the neuroglia, always an attractive subject for the neuro-anatomists, still retains its former fascination, and although the results obtained from the work of the present are as yet meager they merit some consideration. Southard¹⁴ by working with a very refined technique and using as material various pathological brains has been able to contribute something definite to the knowledge of the subject. He has determined that the various layers of the cerebellum have their own characteristic reaction to different processes affecting them. His paper may be taken as a type of the better work that is being done in research on the finer anatomy of the nervous system. It must be said,

however, that the very refinement of technique carries with it a quality of confusion from which it is difficult to derive general conclusions. The most ambitious work that has appeared on this subject is by Stertz.¹⁵ This paper is interesting and merits attention not alone on account of its thoroughness but likewise because it is the first considerable piece of work in which Mallory's stain is used to great advantage, outside of Mallory's own contributions. In this paper is presented most of the positive facts that we possess on the subject of the neuroglia, not only in its normal relation but likewise in pathological conditions. As a contribution to our present knowledge of neuroglia, this work is easily the most significant that has appeared during the year. In the foregoing mention of anatomical contributions of the year just passed, nothing more is attempted than to indicate the varied kinds of activity that this department of research shows and to mention a few of the more typical pieces of work which are illustrative of this activity.

The physiology of the nervous system has been a field of great activity in so many departments that any sort of selection is practically impossible. Therefore only one piece of work will be mentioned in any detail chiefly because of its great value as a contribution to neurological science and because it represents a high type of research in the nervous system, the type that is experimental in method and clinical in application. The work in question is by Head and Sherrin.^{16 17} They start out by outlining a theory of afferent nerve function which is novel and interesting. This theory is based upon facts that have long been known. The theory thus formulated is tested by experiments carried out in the most painstaking manner and by observations of a clinical nature concerning chiefly the results of peripheral nerve injuries. An interesting feature of the work is the insistence of a much more exact method of sensory examination and supplying means by which this can be carried out. It is naturally impossible to abstract adequately a work of this kind or to indicate even the wealth of the material made use of in supporting the thesis advanced. The authors believe that our former conception of the function of sensation is not nearly accurate enough. The new sensory functions are called the protopathic and the epicritic. They are really specific qualitative and quantitative activities. The sensory mechanism of the peripheral nerves is found to consist of three systems. Deep sensibility which is readily recognized from our old conceptions, protopathic sensibility capable of responding to painful cutaneous stimuli and to the extremes of heat and cold. This is the great reflex system producing a rapid, widely diffused response unaccompanied by any definite appreciation of the locality of the spot stimulated. Epicritic sensibility by which we gain the power of cutaneous localization,

of the discrimination of two points and the finer grades of temperature called cool and warm. This is the theory in outline. The second of these papers is concerned with clinical data and experiments on the living, one of the authors himself being the subject of the experiments which are used to examine and test the theory so advanced. This second paper comes very near being a model of a clinical paper which has for its object the proof of a physiological theory. It should be read for this if for no other reason.

Some mention should be made here of a class of work that for some time has been somewhat neglected in physiology and that is the study of brain weights in relation to physiological function. Under new conditions and with more advanced technique, valuable information can be obtained. Such papers by Pearl¹⁸ and Vogt,¹⁹ the latter on absolute brain weight, are of this sort. Barker,²⁰ always a firm upholder of the validity of the neuron doctrine, in the Harvey lecture of this year brings the facts of the recent work on the subject forward to the present. This is an eminently readable paper. The early history of the neuron doctrine is reviewed and all the objections that have been advanced against its validity are fairly stated. Barker brings forward as a further proof the work of Harrison that had not at that time appeared, and comments upon it as being the most valuable piece of investigation that has come out in the last ten years on that subject. Altogether Barker makes a strong case for the persistence of the neuron doctrine of course, from the point of view of one of its staunchest supporters. A very interesting contribution to the physiology of speech should be noted here chiefly because it threatens to shake one of the most firmly established of our ideas on the mechanics and the localization of the speech center. Marie²¹ believes as a result of the study of some fifty autopsies that in cases of aphasias of various kinds he is enabled to say that all our previous ideas in regard to the localization of the motor speech center at the foot of the third frontal convolution are wrong. He points out that in all aphasias of all sorts there is always a lack of understanding of spoken words. Some of the reasons for his stand on the point of localization are that there are cases of disturbances of the left Broca convolution in right-handed people without speech disturbance. There are cases of Broca's aphasia with an intact third frontal convolution. Briefly these are some of his conclusions. Wernicke aphasia is the result of a defect in intelligence, by which the ability to understand spoken words, to write and to read is diminished or lost. Broca's aphasia consists in this plus anarthria. Aphasia as a unit is produced only in the event of a lesion in the territory of Wernicke. This paper has attracted a great deal of attention and discussion as may well be imagined. The consensus of opinion seems to be that it is best

to wait until confirmatory evidence is ready and attention might be called to the unusual fact that conclusions derived from the study of the autopsy material of fifty aphasics is a pretty difficult problem to attack. It might be mentioned that another form of aphasia has been described by Raymond and Egger.²² A criticism by Dejerine²³ upon the justification of this new variety, adds to the already complicated subject of speech disturbances. This new condition is called tactile aphasia and consists in the inability to recognize and name objects placed in the right hand, with ability to do so if they are placed in the left. Dejerine believes that another interpretation of this phenomena is possible so that it is not necessary to establish a new form of aphasia.

The most notable paper, all things considered, that has appeared in the pathology of the nervous system this year, has been Robertson's²⁴ Morrison lectures on the pathology of general paralysis of the insane. In these lectures he sums up the work that has been done on the pathology of this disease in the Scottish Asylum's laboratories for the past three or four years. Although Robertson's views have been given publicity before, in several shorter papers, nowhere has it been possible to appreciate thoroughly his novel views and to understand how they have become developed. Whatever difference of opinion there might be in regard to the correctness of the view he holds, the conclusions that he has arrived at must be respectfully considered because they were arrived at only after the most careful experiments, exhaustive microscopical observations and deductions made from them. A very brief summary of his views may be stated as follows: He does not believe that any theory holding the syphilitic or the metasymphilitic origin of dementia paralytica explain all the facts nor enough of them to make this theory seem probable. A study of many brains from dementia paralytics convinced the author that the conditions found were the results of some process originating within the body. To find out the toxin, its place of origin and the productive agent, appeared to the author as the most logical field of inquiry open in the study of this disease. By careful laboratory methods, experimental and otherwise, and with the help of M'Rae Jeffrey and other bacteriologists of reputation, he succeeded in isolating a bacterium, in seventeen cases out of twenty, resembling the Klebs-Loeffler bacillus. The cultivation and the study of these organisms showed that it had a positive etiological importance in the disease. They were ready as a result of this opinion to give it the name of bacillus parlyticus, thus indicating its etiological significance. The chief result of all this work is that syphilis and alcohol become secondary factors in the causation of dementia paralytica while the toxic cause and the organism originating the toxin are relegated to the first

place. Dementia paralytica then is a disease caused by a toxin originating from a definite organism called the bacillus paralyticus. No more significant attempt to solve the problem has been made nor has any more significant paper on dementia paralytica appeared since the early ones which created for it a distinct clinical entity. Evenson,²⁵ in a very elaborate paper on the pathology of dementia paralytica presents a very careful discussion of the most recent work on the subject, in addition noting the results of his own studies. The interesting thing about his paper is the discussion of Robertson's work which has just been noted. He does not deny the invasion of the body by the diphtheroid bacillus; in fact he acknowledges that he himself has observed numerous specimens in his own work and in the laboratory of the Scottish Asylums. He adds, however, with much insight, that Robertson's theory merely complicates the problem by adding one more unknown factor. This factor is the agent or agency which causes so marked a weakening in the general resistance of the organism that such a bacterial invasion is possible. Evenson suggests that syphilis is this agent and suggests that if Robertson includes this assumption in his theory it would become much more convincing. Both of these papers represent a type of work in neuropathology which is not as commonly met with as it should, that is the work which a clinical pathologist is able to do under circumstances as favorable as is the case in the Scottish Asylums. A very interesting variation to the usual studies in neuropathology is shown by the interest that has been awakened in the study of the central nervous system found in leprosy. Kure²⁶ found in the spinal cord of a case of leprosy, hyperemia of the cord, punctate haemorrhages, edematous pia over the convexity, widened vessels and thickened vessel walls. In the peripheral nerves many lepra bacilli were demonstrated. The interesting thing about this finding is that it offers some explanation for the syringomyelic symptoms so frequently found in the nervous variety of leprosy. Stahlberg²⁷ has investigated the condition of the Gasserian ganglion in leprosy. An opportunity to study the post-mortem appearances in cases of amaurotic family idiocy are sufficiently rare to note all the cases that are published. Poynton, Parsons and Holmes²⁸ describe an interesting series of cases, the autopsy conclusions being the following: There were two post-mortem studies in the series. This is probably a primary disease of the nervous elements. That it is a primary disease of the nerve cells; the affection of the fibres are only secondary. That as the neurofibrils are relatively less altered than the interfibrillar protoplasm the affection of the latter is probably the primary change. That it is not a condition of arrested development. It seems probable that the pathology of tabes has advanced one step nearer to solution on account of some

work which Nageotte²⁹ has published on the collateral regeneration of the posterior root fibres. He studied two points, especially: 1. Moniliform state of the axis cylinders of both the anterior and posterior nerve roots, and the remarkable localization of this alteration in incipient tabes. 2. The curious phenomena of regeneration which took place in the ganglia and in the posterior roots during the whole course of tabes paralleling the destructive process of the radicular fibres. The gist of this work lies in the discovery that there goes hand in hand two kinds of nerve regeneration, one which commonly takes place at the ends of the axon and one which takes place near the nerve center itself, even reaching into the cell itself. The former he calls terminal and the latter collateral regeneration. The latter is a normal process and can be studied by means of Cajal's stain. The latter in its pathological variation is best observed in the posterior root ganglia of tabetics where it tends to supplant the root axones which have been destroyed without showing any tendency to a physiological return of function. There exists then in tabes a lesion of the root fibres which precedes their destruction; this lesion is moniliform swelling of the axis cylinder. This work seems to be of unusual importance as it points to the possibility of reaching the solution of the initial lesion in tabes dorsalis. An effort to solve this problem with positive results should be noted here. A paper by Shroeder³⁰ reports the findings in five cases of tabes. In the blood vessels and connective tissue, changes were found which are interpreted as the effect of inflammatory processes. They were more definite in fresh than in older cases. They were present in the anterior part of the cord as well as in the posterior. A rather novel view in regard to the pathology of epilepsy has been advanced by Turner³¹ based upon the study of numerous post-mortem examinations. He conceives epilepsy to be due to an undeveloped nervous system associated with a morbid condition of the blood depending upon a special tendency to intravascular clotting. The immediate cause of the fit is a sudden stasis of the blood stream resulting from the blocking of the cerebral vessels by the intravascular clots. An interesting observation in regard to the possibility of regeneration processes in the nervous system is found in a paper by Gaussel³² in which a post-mortem examination is described which was done on a case which some years before had an undoubted cerebrospinal meningitis. This patient died from another disease entirely and the examination of the nervous system showed nothing at all pathological. This seems to prove beyond a doubt that there is a possibility of a perfect return to normal anatomical conditions of a nervous system which has been the subject of an acute infectious disease. This very brief review of some interesting papers in the pathology of the nervous system is

given merely to point out some few interesting research papers. It can not be accepted as even a superficial review of the work that has appeared during the year, a large number of papers of which are well worthy of being mentioned.

In reviewing the work of clinical neurology and psychiatry an effort will be made to indicate the chief lines of work rather than to give any very detailed reports. The reason for this is that there is a well recognized tendency in clinical neurology towards more careful clinical reporting. It is as though the usual problems in neuropathology have been investigated as far as they could be in the hands of the ordinarily trained pathologist. The future neuropathologist no doubt will be a specialist in pathological research and his approach to the problems will be through experimental means. Thus the greater number of men who formerly gave so much attention to the report of conventional section work on the cord and brain have now turned their attention to careful clinical study and with a corresponding degree of exactness in their methods as all methods which are based upon pathological descriptions are apt to be. Of course this tendency has been in process of growth for several years and this year sees merely an accentuation of it.

Dana³³ has an extensive article on the subject of muscular atrophy in which a plea is made for the use of a simpler classification. The key to his position is the statement that all groups of central progressive muscle atrophy not due to tumor are essentially the same disease in genesis, course and underlying pathological condition, except that we may separate the progressive occupation atrophies and certain subacute atrophies. Mills³⁴ reports another case of what is probably a unilateral ascending paralysis, though at present the case is one of crural monoplegia. This opens again the question of the existence of this new type of disease, a condition which begins as a paralysis in one extremity and shows a tendency to ascend to the arm and finally to the face. Lannois³⁵ reports a case of muscular atrophy of the aranduchenne type which was due to syphilis and which responded to antisiphilitic treatment. This is interesting because too often in cases of muscular atrophy of obscure origin the possible syphilitic origin of the condition is not thought of. From a clinical point of view there is generally to be found in a year's literature some contributions to the subject of Landry's disease. Schutze³⁶ reports a case which followed typhoid and which eventually recovered. Rolleston³⁷ has an interesting observation on the value from a diagnostic point of view of the early developing paralysis of the palate in cases of diphtheria. In a thousand cases of diphtheria, paralysis occurred in 162; in 50 of these cases the paralysis developed before the third week. To these the term "early" is applied. Some of the con-

clusions advanced from this study are that early paralysis is almost always associated with the malignant form of infection. It is more inclined to resist treatment and therefore of longer duration than the later forms of palate paralysis. An interesting form of diphtheria paralysis is reported by Hamburger³⁸ in which the left hypoglossus was involved. This was recognized by the inability to depress the left half of the tongue. The literature on tabes dorsalis has been unusually large this year. Nothing striking has been advanced with the possible exception of the newly described blood-vessel crisis in this disease. In the Lumelian lecture by Ferrier³⁹ the whole subject of tabes is well reviewed, especially the tabes-syphilis question. Mobius⁴⁰ in his annual review of tabes, in Schmidt's *Jahrbucher*, gives a complete abstract of all the newer points of this disease as brought out in the literature of the preceding year. An instructive paper on this side of the question is to be found in an article by Verger⁴¹ in which is described a case during the progress of which a chancre of syphilitic origin appeared. The idea of blood-vessel crises in tabes is due to the investigations of Pal in which he found certain very remarkable differences in the blood tension in tabetics as well as in certain other diseases associated with a certain degree of arteriosclerosis. In tabes he found, for example, that in attacks of lancinating pain the blood-pressure sank, whereas in gastric crises there was an abnormally high tension in the peripheral blood-vessels. These variations in blood-pressure Pal believes can account for the frequent cerebral symptoms observed in tabes causing epileptic attacks, vertigo, coma, etc. Morchen⁴² reports a case of this kind and calls attention to Pal's work, which he believes has not attracted attention enough. Price⁴³ makes note of a case in which very widespread sensory disturbances completely disappeared during the time that the case was under observation. If this spontaneous chorea can take place in this disease, then the reports that are sometimes published of disappearance of sensory manifestations under this or that treatment, may well be due to natural variations. During the Larredde vogue, reports of this kind were not rare. They were of course attributed to the use of enormous doses of mercury. Racue⁴⁴ reports a new sign in tabes, the analgesia of the tendo Achillis. A very instructive contribution to the tabes question is a paper by Long and Cramer⁴⁵ on the late appearance of tabetic symptoms. In fifteen cases out of forty-six studied the symptoms appeared after the fiftieth year. As possible causes of this the author brings out the fact that a late syphilitic primary affection and an arteriosclerosis are possible factors. It might be noted here that the growing value of arteriosclerosis, as an important factor in many of the nervous symptoms, before thought due to other causes, is prominently brought out in the literature of the

year just passed. Dejerine and Leenhardt⁴⁶ note the fact that a part of the symptomatology of tabes is atrophy of certain muscles or groups of muscles. They report a case in which the muscles of the back and of the abdomen were atrophic and paralyzed. Hirschberg⁴⁷ reports a case of sudden death in tabes, thus emphasizing the facts brought out by Goldflam in an article of the preceding year. The death in this case was probably not due to arteriosclerosis of which there was no sign during life, but was due to the fact that the tabetic process was located chiefly in the medulla giving rise to a group of bulbar symptoms. This point can not be too strongly emphasized as too often the prognosis of tabes is regarded lightly. When it is remembered how often arteriosclerosis is present in this disease and how often aortic insufficiency is found, then a more guarded prognosis, both immediate and distant will be made. Lapinsky,⁴⁸ in a paper that must be looked upon as a valuable contribution to the literature of tabes dorsalis calls attention to the rarer forms of tabes in which the principal abnormal symptoms are found not in the sensory but in the motor sphere. He describes a number of such cases and adds that there are a number of cases of tabes in which the initial symptoms are in the form of paralysis or paresis of the upper extremities. In many of these cases the diagnosis can be made by the finding of various sensory symptoms at the same time. In some, however, the diagnosis is for a long time in doubt. The interesting point of such cases is the fact that although the symptoms are of themselves motor in type, their origin and cause must be looked upon as posterior root affections, the motor affects being due to the loss of sensory function, apparent or not as the case may be. By far the best paper on multiple sclerosis that has appeared during the year is by Taylor.⁴⁹ In this paper attention is called to the fact that the diagnosis of the disease is made much less often in America and papers are written upon it much less frequently than in the European literature. The author does not believe that this is so because there is less of the disease in this country but because in its earlier manifestations it is not so frequently recognized. Twelve cases are given in detail in this paper, with six very carefully worked out autopsies. This is a large material and the conclusions from the pathological point of view are worthy of attention. The following are the conclusions: The rarity of this disease in this country has been overestimated. A more careful examination of atypical cases and a more open mind in diagnosis is desirable. The importance of observing and properly estimating minor symptoms of the disease, particularly unexplained spasticity and ocular disorders must be emphasized. The etiology remains obscure. The pathological anatomy is still a hopeful field for study. Present evidence points towards a primary destruction of the myeline

with either a secondary or coincident proliferation of the neuroglia. Curshman⁵⁰ has this to say in a paper on the early diagnosis of multiple sclerosis: It is a disease due to a congenital disturbance in development, a consequence of multiple gliosis of the cord, which has a long latent period. In its early stages there are temporary eye-muscle disturbances, eye-ground pallor, pupil changes, easily produced fatigue, mild degree of sensory disturbances and a mild degree of disturbance in coördinated movements. The first part of the definition may throw light upon the frequently observed cases of this disease which are supposed to follow traumata of different kinds. Mackintosh⁵¹ gives the data on the frequency with which the early symptoms are found before the development of the so-called cardinal symptoms. He thus analyzes 110 cases from this point of view. This is a very valuable paper and an abstract can not well be given in a limited space. He, however, mentions the early and the constant appearance of subjective sensory disturbances and calls attention to the fact that these are too often interpreted as neurasthenic symptoms and the patient thus lost sight of. He concludes also that there is no ready proof that this disease has ever completely disappeared in a given case and he has records of the existence of symptoms of multiple sclerosis that have been present for more than thirty years. Two cases of the so-called acute multiple sclerosis might well be mentioned here. Marburg⁵² calls this type encephalomyelitis periaxilis scleroticans. The differential diagnosis from peripheral neuritis is mentioned. Wegelin⁵³ gives the pathological protocol of cases in which the symptoms were first noticed by the patient three weeks before she came to the hospital and the disease lasted only three or four months. In this case though the symptoms present might have left some doubt whether the case were really one of this disease, the post-mortem findings made the diagnosis certain. The differential diagnosis between this and disseminated encephalomyelitis will of course always be difficult. While the evidence of the acute inflammatory process will always determine the latter point the symptoms may be produced by one as well as the other as far as any clinical differentiation is concerned. There has been a rather unusual number of papers on syringomyelia in the literature of this year, most of them being case reports accentuating more or less rare features. Burr⁵⁴ reports a case in which the sensory symptoms temporarily disappeared, as a result the diagnosis was in some doubt, the atrophy being then explained as due to progressive muscular atrophy. At another examination the sensory disturbance returned, in its previous form. An ingenious explanation is given by the author, to the effect that the spinal cavities in this disease are filled at times with a varying amount of fluid or that the gliosis exercises at different times a varying degree

of pressure, thus accounting for the appearance and disappearance of the sensory symptoms. It is well to remember this point in the symptomatology of syringomyelia, as variability of objective symptoms has not hitherto been thought of as very frequent in the disease. A case of syringomyelia with double optic neuritis is reported by Thorington and Weisenberg.⁶⁵ Raymond and Francais⁶⁶ report an interesting case of syringomyelia with a spastic condition of the extremities and with a distribution of the sensory disturbances typically radicular in character. This distribution was somewhat similar to that found in tabes. The point that should be remembered in this case is that the distribution of the anatomical process in all cord diseases is often of more importance from a diagnostic point of view than the nature of the process. The character of the sensory changes in a case such as this is produced by the location of the lesion as well as by its nature and both these factors must be taken into account in deciding what the clinical picture means. Raymond and Guillain⁶⁷ describe a case of this disease in which the process was located in the bulb, thus producing many of the symptoms of bulbar palsy. As the spasticity in this case was very pronounced the difficulty in differentiating a case of this kind from an amyotrophic lateral sclerosis can be imagined. Such a case is a further illustration of the remark above concerning the localization of the pathological process.

Contributions on the subject of syphilis generally concern themselves with two aspects of the disease, either syphilitic lesions as such, or the relation of syphilis to tabes and dementia paralytica. On the tabes-paresis question there has appeared this year an interesting observation by Nacke⁶⁸ who made a visit to Bosnia, Dalmatia and Herzegovinia to determine the frequency of these diseases in a country where syphilis is almost endemic. He found that this report was true as far as the frequency of syphilis was concerned. He found whole families suffering from syphilis in all its forms, and he found further that the methods of treatment were most insufficient. In spite of this, however, the amount of tabes and paresis was much less than in the Paris hospitals. From the data gathered during his visit, the author concludes that treatment has very little to do with the possibility of tabes or paresis developing and that there is another factor required in order for either or both diseases to result from a syphilitic infection. The nervous system must have a certain general predisposition, which possibly is of specific character before the disease in question develops. Upon this as a basis, trauma, syphilis, alcohol are the necessary direct factors. Hübner⁶⁹ contributes a very interesting set of statistics on the tabes-paresis syphilitic question. One of his interesting conclusions is that prostitutes show a much larger percentage of tabes and paresis than other women. It has long been

asserted by the opponents to the syphilitic origin of these two diseases that prostitutes, though much more syphilitic than other women, show no greater percentage in respect to the disease in question. Catola and Guinio⁶⁰ attempt to prove the assertion that syphilis can produce in the cord, lesions that are identical with those found in multiple sclerosis. They describe two cases as proof and include careful photographs of the microscopical sections. These are convincing enough to make it necessary at least to consider syphilis as a possible etiological factor, unless it be assumed that syphilis is capable of producing the group of symptoms of multiple sclerosis by an especial localization of a true syphilitic myelitic foci. Buzzard and Barnes,⁶¹ in a paper on chronic progressive double hemiplegia, have rendered a great service by showing that this disease is really a definite one and that it must not be confused with spastic paraplegia, a term which was once in very common use. Their case showed the symptoms of the disease and the post-mortem plainly demonstrated that there was a progressive degeneration of what they call the upper neuron. The etiological factor was probably an arteriosclerosis especially marked in the middle cerebral arteries and their branches. This paper throws a great deal of light upon a disease which until recently was one of the most commonly diagnosed in hospitals and clinics. With the explanation of the symptoms on the one hand by multiple sclerosis and the new observation of these two authors the outlook for further knowledge is much brighter. The literature on tumors of the brain and cord has been so large this year and the report of cases has been so frequent that the task of selecting even the more representative papers in a short review is almost impossible. Probably the most attractive paper or papers rather are from the pen of Oppenheim.⁶² In a paper published with peculiar fitness in the journal devoted to questions on the borderland of surgery and medicine he gives the history of a number of cases of spinal cord tumor. Those who are acquainted with the high standard of Oppenheim's work will not be surprised at the remarkable exactness of description which this paper shows. From a clinical point of view there is probably no better description of the symptoms of spinal cord tumors than is found here. The question of differential diagnosis so important in such cases, is entered into with great detail and the localization is worked out with admirable exactness. Oppenheim himself calls attention to the accuracy of topographical diagnosis and apparently believes that it is almost always possible in tumors situated in this region. The therapeutic results viewed from the point of view of recovery is not very satisfactory for the reason that only extramedullary tumors seem favorable operative cases. An interesting point is the sudden and unaccountable death in one of the most suc-

cessfully operated cases. The question of what Oppenheim calls bulbar shock, that is, the shock resulting from destruction of the cord during the operation, is one that should not be lost sight of in operations of this nature. In another paper Oppenheim and Borchardt⁶⁵ give an account of two successfully operated spinal cord tumors. In a third paper Oppenheim and Krause⁶⁴ describe a successful removal of an occipital tumor with the problem of localization accurately solved. He calls attention to the important fact that the prognosis of cord tumors is much better than that of cerebral tumors. It can be easily seen from these three papers that the problem of localization is no longer the crux of the tumor question, if located in the brain or cord. That, in a measure, has become more or less a routine matter on account of the numerous papers that have appeared in the last few years. After all the chief difficulty is in the early diagnosis and the chance that the tumor may be in a favorable position to be removed and that its character is not malignant, which in tumors of the cord and brain means that the tumor is more or less demarked from the surrounding tissue. Of course there are no data which can be relied upon to prognose this point in advance of the operation. Victor Horsely's⁶⁶ paper before the British Medical Society at the meeting in Toronto must be regarded as the most important paper on this subject that has as yet appeared from his pen on the surgical aspects of cerebral tumor. Bramwell,⁶⁸ in a paper on extracerebellar tumors, reports four cases of pontine angle tumors. One was operated upon with death; it was found to be a fibroma. The mortality of this variety of tumor still continues too high to regard operation as a therapeutic procedure of any great importance. Mogquin⁶⁷ reports a case of pseudo-tumor cerebri caused by an empyema of the ventricle. Of course this is not a pseudo-tumor at all, as negative findings are necessary before the case can be said to belong to this category. These are only a very few of the citations on this subject that might have been mentioned. The success in accurate localization points certainly to a more careful examination of the patient than has been the case before, because the percentage of failure in localization and in diagnosis continues to decrease. It is somewhat strange that the percentage of favorable cases however does not seem to keep pace with the accuracy from the clinical point of view. On amaurotic family idiocy there continues the interest that was present a year ago. Numerous reports of cases or groups of cases appear, so that from a clinical point of view there should be no longer any difficulty in recognizing the disease wherever it is found. Markbreit,⁶⁸ in a report of two cases, states his opinion that the typical eye findings are not essential for the diagnosis. Sterling⁶⁹ gives a resumé of the whole subject and reviews the literature as far as it has developed. The

contribution by Poynton which might be regarded as the most valuable that has appeared has been referred to in the section devoted to pathology. Spielmyer⁷⁰ reports a case of what he calls a special variety of family idiocy, that is distinct from the so-called Tay-Sachs type. The reason for his opinion is that he found a pathological picture entirely distinct from that observed in the previously published reports. He believes that the pathological appearances are the best grounds for a clinical classification in this disease. Attention was called in the review of last year to the growing importance of the role of arteriosclerosis in the causation of groups of symptoms in nervous diseases. The subject has advanced far enough to make out of the composite group of cases a definite clinical type. Collins⁷¹ in a very instructive paper gives the outline of what he calls a definite variety of cerebral arteriosclerosis. The gait is peculiar. This has not escaped the notice of previous investigators though they have failed to recognize the cause. The expression of the face is likewise typical. These cases can now be recognized by the usual clinical measures. In the post-mortem protocols, the arteriosclerosis of the cerebral vessels is most pronounced. The strange thing about these cases is that the amount of arteriosclerosis in the peripheral vessels need not be excessive. A reference to the case of double progressive hemiplegia made in this paper a few pages back, recalls the fact that Collins regards as marking a type that would naturally fall in his classification. Collins points out that the comparison of the brain in this condition with that of the sclerotic kidney is very apt. This paper of Collins' should receive wide attention for it makes plain a number of cases that before have not been very well understood. Only a very limited mention of hysteria and neurasthenia is permitted in this review on account of the lack of space. It can be said that clinical investigation in the greater neuroses continues to be as active as ever. In this year's literature the subject of hysterical fever receives a certain amount of attention that bids fair in time to solve the puzzling question of its reality or not. Goldflam⁷² reports a case. Voss⁷³ discusses the theory of the condition and a report published by Stiller⁷⁴ of a case that is not very convincing are the most noteworthy papers. There is this to be said, until other causes can be excluded in a given case, which is not at present possible, there will always be some doubt about the reasonableness of concluding that such a condition can exist purely on a hysterical basis. A new definition of hysteria is always of interest. Ziehen⁷⁵ has the following to say: Hysteria is characterized by an increased activity of the affective ideas. The affective ideas are of themselves normal. Whereas in the normal individual the influence of such affective ideas as they react upon the feeling, sensation, thinking and doing are limited by

definite laws to a relatively small or limited area; in hysterical subjects this limitation is overridden. This might be said to be as satisfactory a definition as it is possible to advance with the knowledge that we have at present on this subject.

The difficulty in giving adequate abstracts of papers on psychiatry and the lack of any definite measure of progress in this part of the review will account for the limited space that has been devoted to it. As a rule the more clinical a paper on psychiatry is the more value it has. It is very difficult to give the gist of a paper of this sort, so only a few papers will be mentioned. Hoche's⁷⁶ paper on the study of delirium produced by drugs adds very considerably to the information on the subject. The drugs which were considered in this paper were the bromides, hyoscine, morphia and various true hypnotics. Inasmuch as these are in constant use among neurological patients of various kinds the deliria produced by them must be common and ought to be recognized. The clinical descriptions given in this paper are excellent and if for no other reason the article is worthy of careful reading. Of course the material is not large enough for any general conclusions to be drawn, but the clinical type caused by them is sufficiently clear to be recognized in the future. Paton⁷⁷ has written a valuable article especially for the American reader on the care of the insane in Germany. This paper brings out clearly that in this country both the study and the interest in psychiatry have been allowed to become less important than ought to be permitted or than is consistent with development of medicine, in general. In the report of the congress of alienists and neurologists, held at Lille, Williams⁷⁸ mentions among other interesting points brought out in the discussions that the role of trauma in the causation of dementia paralytica is now largely denied among the French neurologists as it has long been denied by the Germans. In fact the other point is of more importance, that is the role of paresis in causing trauma. In a paper on dementia praecox Pascal⁷⁹ brings out the importance of causeless laughter as one of the earliest diagnostic signs of this disease. Farrar⁸⁰ describes the insanities occurring in the devolutional period of life. By this term he signifies the period just before the senile changes occur. He compares the forms seen then to those which appear in the evolutionary period of life to which dementia praecox especially belongs. The recognition of these types is important for they are of frequent occurrence and have not attracted the notice which their obvious importance demands. These psychoses are of a depressive type and often end in full recovery. Notice should be given here of a series of papers from the same pen, Farrar,⁸¹ which are called clinical demonstrations. They are excellent clinical descriptions of actual cases given in the thorough fashion that is being

required now in all clinical psychiatric work. Julius Burger⁸² has a suggestive paper on pseudomelancholy. This type is frequently met with and this paper gives an opportunity to understand and properly appreciate an abnormal state of depression which is not characteristic of true melancholia and which carries with it none of the necessary consequences of the latter disease.

The most interesting subject in therapeutics of the nervous system is by all means the work that has been done on the specific treatment of Basedow's disease by serum. The reports are numerous and in a measure confusing, chiefly for the reason that no long period has passed in order to test the value of the treatment. Rogers⁸³ describes the principles underlying the making of the specific serum which he and Beebe⁸⁴ have devised. This serum differs from all the others in the fact that it is derived from a human thyroid gland that had been removed for the disease. In this regard it is truly a specific serum which in case of human subject should be very active. Mobius' serum on the other hand, as is well known, is simply the serum from thyroidectomized sheep and its effect on the human subject is even yet problematical. The reports from the use of this and other sera continue to be favorable, and the literature that has grown up has become very large. Starnsky,⁸⁵ Tedelenberg⁸⁶ and others have published cases which show the good results of treatment which in no instance, however, are asserted to be permanent. No definite opinion can be given as yet on the value of the serum treatment in spite of two years of widely scattered trial. The most promising outlook certainly is given by the Rogers-Beebe serum which seems to be devised on more reasonable grounds than the others. The other advance in therapeutics is the newly awakened interest in the problem of psychotherapy. In this respect there have been a number of papers which deserve mention not especially because they add anything new to the subject but because they show that the efforts of the right sort of men are being directed to an examination of the data on this subject with the view of eventually developing a sound system of psychotherapy based upon a correct interpretation of the facts that are at present to be had in support of such an attempt. Putnam's,⁸⁷ Oppenheim's psychotherapeutic letters,⁸⁸ Barker's⁸⁹ paper on the isolation ward method tried at Johns Hopkins Hospital are typical papers of this kind. The advances in means of diagnosis are not especially strikingly shown in the literature of this year. There have been some papers dealing with the study of the cerebro-spinal fluid but no new points have been brought out. A certain number of new reflexes have been written about but with each new reflex discovered there arises immediately a dispute concerning the priority of discovery, and the value of the reflex is soon lost sight of. The discovery of the

spirochætæ pallida has aroused some interest in the question as to whether this might not be used in the early diagnosis of dementia paralytica or tabes. This seems a fruitless thing for its presence or absence would not even be confirmatory of these diseases but would merely mean that syphilis in one form or the other had been present.

The most notable production in neurology this year can be said without fear of argument to be the monumental work of Campbell⁹⁰ on the cerebral cortex. The purpose of this work stated in the preface is a study of the cortex cerebri in the normal state, which may be regarded as the corner stone in the histological foundation upon which the superstructure of cerebral localization may be reared by workers in other departments. The author has succeeded in studying the whole surface of the brain in a comprehensive and complete manner. This has never been accomplished before. The material is divided into three divisions: normal human, normal comparative, and pathological. No praise seems too extravagant for this piece of work. It suggests immediately an ideal that must be attained in work of this nature in others before the same recognition is accorded. Oppenheim's "Therapeutic Letters" marks an advance in psychotherapeutics that is bound to be effective. These are very carefully planned letters, sent to patients suffering from various psychical diseases in which the means in use in psychotherapy are put down in such a way that appeals to the patient at a time when he can read such letters at his leisure. The letters themselves are models of clear explanation, persuasion and essential logic which fixes Oppenheim as a psychotherapist of an advanced type. It will be interesting to see the effect of this monograph on the production of similar efforts.

Spiller and Posey's⁹¹ long expected textbook on the neurology of the eye has at last made its appearance. There are many admirable features to the book, but the chapters are of themselves uneven in merit, which is to be expected from a textbook written by so many different hands. Weigert's⁹² collected writings have now appeared and they should appeal to every neurologist as representing the work of a man who by his careful technic has made modern neuropathology possible and who has contributed what is today the most admirable paper extant on the neuroglia. This paper set a standard for careful work which has been effectual in keeping others to the same high ideal. Schultz,⁹³ on the brain and soul, is mentioned here because it is one of those admirable German monographs of a semi-popular character which is responsible for some of the interest in psychology so typical of the German investigator in almost every field of medicine.

In closing the review of the year just passed the author wishes again to call the attention of the reader to the increasing difficulty of

the task he has attempted. The mass of work has become so large that it is practically out of the question to give an adequate review of the literature of one year in a limited space. Whether this increasing amount of published work is a good thing or not it is not for him to judge. Of one thing he is certain and that is that in some parts of this work, a notable advance has been achieved and that is in the increase in the accuracy of clinical reporting. Whether this is due to continued practice or to a better conception of the art of clinical writing is not easy to say. It is, however, a pleasure to recognize this and to make note of it in the concluding words of the review for the year just passed.

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LARYNGOLOGY AND OTOTOLOGY.

IN CHARGE OFWILLIAM E. SAUER, M. D.

During the past year there have been no striking advances in laryngology and otology, but there has been considerable activity shown along all lines. The subject that has received more attention than any other, especially in this country and in England, is the correction of septal deformities. In Germany, the submucous resection operation has superseded all others. There are still some authors who hold that the submucous resection of the septum is not to be employed in all cases. Among these are Price Brown,¹ who is inclined to believe that the removal of so much cartilage and bone is contrary to the generally accepted views on surgery, namely: To replace and not to excise normal tissue. He also fears that this weakened membranous septum will not withstand the aridity of such fevers as those of the pneumonias and the typhoids. As a result there will be a much larger percentage of perforations among the people during future years. The author describes a new straightening operation, which he calls the "H" operation; in reality it is only a modified Ash operation. He reports one successful case. Sluder² believes there is still a need for an operation suited to the condition existing in children, one that can be performed quickly and easily with the least interference with the integrity to the septum. He believes, as does Carter,³ that the septum plays an important part in the growth and development of the nose, and should not be removed during the years of most active growth. Sluder's method of procedure consists of making three parallel incisions through the septum, the central one being at the apex of the convexity, extending the full length of the deformity. The other incisions are made at the point where the deflected portion joins the straight portion. The parts are then placed in position and held in place as in the Ash operation. This method has been employed in twenty-four cases, and a satisfactory result has been obtained in all. Winslow⁴ believes that there is a reaction in favor of the older operations, and that, in some cases, better results can be obtained by the old than by the new. He admits, however, that the submucous operation is indispensable. Roe⁵ believes that there is considerable danger of a flattening of the nose taking place from the removal of the septum. He also believes that this operation should not be done on children. McDonough⁶ states that the patient should not be deprived of the support given by the septum, if a less severe operation will suffice, and insists that no more bone or cartilage than is absolutely necessary should be removed. Among the

most enthusiastic advocates of the submucous operation are Freer,⁷ Ballenger,⁸ Beck,⁹ Carter,¹⁰ Yankauer,¹¹ McCoy,¹² Thompson¹³ and many others. Freer, Thompson and Beck believe that this operation is suitable for all forms of deviations. Freer feels no hesitancy about doing this operation on children. Beck gives the following reasons for always choosing to do the submucous method in preference to all others: 1. The operation can be done in almost every instance under local anesthesia with comparatively little pain, shock or discomfort to the patient. 2. Hemorrhage, subsequent to the operation, is usually very slight. 3. The after-treatment is very simple and not annoying to the patient, and shortened by many weeks. 4. Only one side of the nose is attacked, and the patient breathes freely through the other nostril while the other side is healing. 5. The results are obtained with the destruction of a very slight area of functioning mucous membrane; and cicatrices and crust formations are not present in the same degree as in other methods of procedure. There have been a number of instruments devised which greatly simplify the technique of the operation, notably those by Beck, Ballinger and McCoy.

The diseases of the accessory sinuses have not received as much attention as in the past. This can probably be accounted for from the fact that the pathology and the treatment are better understood. There are, however, still some phases of the subject which have received considerable discussion. The employment of the X-ray in sinus diseases as an aid in diagnosis has been studied by Coakley.¹⁴ He is convinced that a good skiagraph can be depended upon to demonstrate not only the size of the accessory sinuses of the nose, but the presence or absence of disease as well. The presence or absence of the frontal sinuses can be demonstrated with certainty before operation; its size can be accurately determined, as well as the location of the septum between the sinuses. The width of the ethmoidal region can also be determined. Mosher¹⁵ also found that the size and shape of the sinuses can be determined by the x-ray. In three of his cases he was able to determine the presence of pus; this was substantiated by the operative findings. Menzel¹⁶ has proven by his experiments that there is no danger of any fluid entering the ethmoid or frontal sinus while irrigating the antrum. The suction method of Sondermann and Spiess, in the diagnosis and treatment of sinus affections, is advocated by Brawley,¹⁷ who finds this method to be of some value in certain cases. As for the treatment of the chronic suppurations of the maxillary sinuses, the consensus of opinion seems to favor the intranasal route, of opening and draining the sinuses. The present status of this question has been ably discussed by Tilley.¹⁸ The radical operation of Denker¹⁹ has been warmly supported by Stolte.²⁰

The operations of Killian and Coakley are still the favored ones for the frontal sinuses. The indications for the surgical opening of the frontal sinuses are given by Hajek.²⁰ He claims that this operation is done more frequently than necessary. He believes that the endo-nasal treatment is too often neglected. Hajek had done this operation only twenty-three times in twelve years; as compared to Mermod, who had operated on one hundred and sixty-five cases. The sinuses should be opened without delay when there are cerebral complications present. When the headache and nasal discharge persist in spite of endo-nasal treatment. If only a discharge of pus remains one must individualize whether or not, the sinuses should be opened. Hajek²¹ has studied the mode of infection in a case in which death followed an operation on the ethmoid. He found that the infection had taken place by way of the blood vessels. Streptococci were found in the swollen mucous membrane and blood vessels of the ethmoid, which communicate with those of the dura; the bone was found to be intact. Delneuve²² reports a case of marked disturbance in vision with central scotoma for colors, in which a return to the normal was affected by the treatment of the suppuration in the sphenoidal cavity. This case illustrates the importance of the nasal examination in such cases. Fischer²³ finds that obscure ocular lesions are sometimes the evidence of an affection of the cavity surrounding the eyes, even when there are no classical symptoms of sinusitis. Wheelock²⁴ reports a case of pneumococcus infection of the antrum, which was followed by rheumatic symptoms in the knee, shoulder and elbow joints. These symptoms rapidly subsided after the antrum had been opened and drained.

The serum treatment of hay fever has not been as encouraging as we had hoped. Cohn²⁵ found its effects to be positive in from 30 to 50 per cent of the cases. In his hands it has not been more than a palliative, however. Cohn has found a tablet containing 1-20 grain suprarenalin, with a small amount of sugar of milk, to be effective when allowed to dissolve on the back of the tongue. This dose may be repeated in ten minutes, or in two hours, as necessary; sometimes one dose will suffice for the day. Somer's²⁶ experience with the antitoxin during the past three years has led to the following conclusions: 1. The antitoxin produces prompt and positive amelioration of the symptoms of hay fever in a large majority of cases. 2. In a small number this is accompanied with a complete disappearance for that particular season. 3. Where slight or no action is seen, it is due to improper administration; while in a very small number some idiosyncrasy is undoubtedly active. 4. When results are obtained it favorably influences all manifestations of hay fever, in the larger number of cases; while in the smaller class, one or more of the symptoms

seem to be markedly influenced. 5. When given during the attack of hay fever irrespective of its severity, it produces palliation rather than cure. 6. When successfully used during one season, it does not prevent the reappearance of the disease the following season, although there is reason to believe that a slight influence in modifying other attacks does exist. 7. The antitoxin is effective in both powder and liquid form; but the latter is preferable, as it is staple, does not require a preservative, and is more convenient for the patient. Zarniko²⁷ analyzed the reports received from patients at the Institute of Hygiene at Hamburg, who had been treated by pollantine. During the past year there had been 492 responses to the questions which were sent out with each tube of the pollantine. Zarniko classified these under three headings; 1st. Those in which a satisfactory result was obtained; 2nd, those in which partial relief was obtained; 3rd, those in which no effect was noticed. Of the European cases, 189, or 66 per cent, came under the first class; 78, or 27 per cent, under the second; and 20, or 7 per cent, under the third class. Of the 205 American cases, 113, or 55.1-10 per cent, were in the first class; 35, or 17 per cent, in the second, and 57, or 27 per cent, in the third class. Summing up these cases, a total of 61.3-10 per cent, in which a satisfactory result was obtained; 23.1-10 per cent, in which partial relief was obtained, and 15.1-10 per cent as failures; some of the failures are attributed to a faulty diagnosis. Renault²⁸ describes a new method of treating hay fever. He considers spasmodic coryza to have an arthritic basis. In fourteen cases he adopted the suggestion of Brindle, and had made interstitial injections under the nasal mucous membrane; in all the cases it had brought about complete cessation of the symptoms. In this affection, according to Brindle, there is excessive vasodilatation of the erectile tissue of the pituitary membrane, with more or less edema. The hydrorrhea is regarded as a glandular hypersecretion, but is really an escape of the serum through the meshes of the congested mucosa. It is this view of the pathology that has led Brindle to institute his treatment. He sought by the injection of paraffin to interpose a mechanical obstacle; the blood being thus retarded enters the vessel under lower pressure than before, and in smaller quantity. In consequence, the osmosis and the hydrorrhea disappear. This ingenious procedure is indicated, according to Renault, only when the nasal mucous membrane is still retractile. It is contra-indicated when there is a degeneration and hypertrophy of the mucosa, and when certain lesions are present in the nasal chambers, such as spurs and polypi, which, through reflex action, may thus explain the recurrence of the attacks of spasmodic coryza. Schadle²⁹ reports three cases of hay fever successfully treated by washing the antrum with warm boric acid solution until the fluid came away perfectly clear

and free from sediment. The sinus was then insufflated with thymol iodide. This form of treatment was continued for several days; complete relief was obtained after the third treatment. The author believes these cases illustrate the intimate relationship existing between a morbid state of the maxillary sinuses, and a local general phenomena of hay fever. The antral theory (which was first advanced by Fink, of Hamburg, several years ago) embodying these factors, is that the antrum of Highmore provides the secretion which forms the agent that causes the local irritation in the sinuses and nasal passages alike. Fink³⁰ formerly employed aristol, but now employs thymoliodide. Boesser³¹ has modified Helmholtz's method of local application of quinin for hay fever by mixing caffen with the quinin and instilling it into the eye instead of the nose. Two parts of quinin and one part of caffen are mixed together, and a one per cent solution made of this mixture. A few drops of this solution are instilled into the eye at the first typical itching in the inner angle. He says that with the exception of the maxillary sinus, this disinfects all the parts where the hay fever reflex symptoms are generated. The effect of the instillation lasts about six hours or more. Wollner³² reports a case of hay fever cured by cold applications to the forehead and face. Relief was obtained in three-quarters of an hour; the treatment was kept up for three hours. There was no recurrence of the attack during the season; another attack was relieved a year later by the same treatment.

The etiology of ozena is discussed by Broeckhaert,³³ who considers ozena as a special chronic inflammation of the pituitary membrane; particularly of the inferior turbinate, ending at length in diffuse sclerosis of the mucous membrane. The most important changes are the horny degeneration of the superficial epithelium and degenerative changes in the glands. In consequence of the changes in the vessels, nutritive troubles take place which affect the mucous membrane, the bone, and the periosteum. The lesions are less marked in the ethmoid, which become affected with atrophy in advanced cases. Histologically, the mucosa affected with the ozena shows that there is chronic toxic infection, although, in the author's views, neither tubercle nor syphilis can be considered as direct causative factors; he thinks that para-syphilis and para-tuberculosis may produce the disease when certain pre-disposing causes exist, such as platyrrhinæ. This theory explains why so many ozenatous patients become tuberculous. Guiez³⁴ reports twenty-two cases of ozena treated by injections of paraffin in the submucosa; he obtained a complete cure in seventeen cases. His method of procedure was to inject only one cc. at a time, and repeat at the end of six days. All other local treatment was stopped, with the exception of introducing a little sterilized petrolatum into each

nostril. Navaratil³⁵ reports five successful cases treated by this method. The case reported by Silberstein,³⁶ in which the injection of 4 1-2 ccm. of hard paraffin with a melting point of 43 C. for the correction of a saddle nose, resulted in a thrombosis of the ophthalmic vein and blindness, shows that even the injection of hard paraffin should never be undertaken unless there is some urgent indication. Freer has obtained such satisfactory results in the treatment of ozena by irrigation and Gottstein tampon, followed by application of an ointment of lanolin, vaseline, and 2 per cent salicylic acid, that he considers paraffin injections unnecessary.

The bacteriology of a common cold has been studied by Benham.³⁷ The results of his examination in twenty-seven cases showed that diphtheroid organisms were found to be present in twenty cases out of twenty-one, that is, ninety-five per cent. He was able to isolate them in five cases. Cocci negative to Gram's stain were seen in ten out of the twenty-one cases, that is, 67 per cent; some of these were pneumococci. They were not present in large numbers in any of the cases. Pfeiffer's bacillus was found in only two of the cases. Other organisms similar to those found in the normal nose, were found in small numbers.

The galvano-cautery as an agent in the treatment of hypertrophic and intumescent rhinitis, had been practically discarded by many; during the past two years there has been a reaction in its favor. Ingalls³⁸ and Friedberg studied 100 cases of intumescent and hypertrophic rhinitis. They concluded that the galvano-cautery when properly used, offers one of the best, if not the best method for the treatment of these affections. They believe the danger of middle ear affections has been greatly exaggerated; only one among several thousand have come under their observation. The tendency to the formation of adhesions is not great if the septum is not injured. The objection that the galvano-cautery destroys too much of the mucous membrane does not obtain if the cauterizations are linear. In this form of treatment scab and crust-formation does not occur any oftener than after other nasal operations. Freer³⁹ is also an advocate of linear cauterization in these cases. In order to obtain the desired result, a single linear cauterization along the entire length of the turbinate down to the bone is necessary.

Richardson's⁴⁰ study of septal perforations in which there was no known etiological factor and an indefinite pathological history, show that tuberculosis was more or less in evidence in sixty-six per cent, either in this direct physical evidence or the family history. He believes this to be more than a pathologic coincidence. Goldstein⁴¹ has applied the submucous resection principle in the treatment of septal perforations in those cases in which the mucous membrane has not

covered the bone or cartilage, and there is much crusting. Enough of the cartilage or bone is removed, so as to allow the edges of the mucous membrane to come in contact, resulting in a perforation whose margin is covered by mucous membrane. All crust formation ceases.

In the proceedings of the Laryngological Society, of London, there has been considerable discussion as to the permanency of the paraffin deposits deposited for the correction of nasal deformities. Some of the cases which at first seemed very promising, showed a return of the deformity. Downie⁴² does not believe that the paraffin becomes absorbed. He has found no changes in the cases in which injections had been made four years ago. He employs a paraffin with a melting point of 106 to 108 F. He has operated on 140 cases with a satisfactory result in most of them.

Alypin, as a local anaesthetic in rhinologic practice, has been employed by Finder.⁴³ He has used it extensively in 20 per cent solution, and in no case did he have any disagreeable symptoms. Phillips⁴⁴ has also employed alypin and finds that it has the power of producing local anaesthesia, without producing any systemic effects.

The intimate relationship which exists between many affections of the eye, and the condition of the nasal cavity has been brought out by Baumgarten.⁴⁵ These had been studied chiefly in chronic cases in which necrosis of the bone had given rise to some lesion in the orbit. The following cases have been reported by the author, namely, unilateral protrusion of the eye ball, with an edema of both sides, following a serous ethmoiditis. Edema of the eye associated with ulceration of the nasal septum. Paralysis of the internal rectus and the inferior oblique associated with sphenoidal sinusitis. Orbital and supra-orbital neuralgia, caused by a purulent inflammation of the bulla ethmoidalis. Protrusion of the eye ball associated with a serous sphenoidal sinusitis.

Headache of nasal origin is described by Lack⁴⁶ as a dull aching sensation, or as a sharp and stabbing pain, or as a feeling of heavy pressure. It may be located at the frontal region to the vertex or to the back of the head; it may radiate all over the head, even true hemicrania may be met with. There is often no characteristic feature indicating its nasal origin. Generally the pain in the head associated with nasal disease is more circumscribed and continuous than headache due to other causes. It often seems to start from, or radiate into the nose, and is often neuralgic in character. The following nasal conditions are given as causes of more or less distinguishable forms of headache: 1. Headache resulting from nasal obstruction; this being especially common in children suffering from adenoids, and in adults with nasal polypi or hypertrophic rhinitis. In adults, headache is more common in diseases of the ethmoidal region, than in

disease of any other part. The pain in this condition is usually of a dull aching character, occurring chiefly on waking from sleep, and wears off during the day. 2. Referred pain from nasal pressure; a typical example of this form of headache is that due to an enlargement of the middle turbinate. The pain is referred chiefly to the supra-orbital region of the same side, whence it may radiate down the nose into the eyes and across to the opposite side. When very severe it is accompanied by pain on pressure over the supra-orbital region, and over the nasal bone. This pain is often associated with suppuration in the frontal sinus, ethmoid, or antrum, but occurs independently and generally disappears when the anterior end of the middle turbinate is removed. The periodicity of this pain is due to an intermittent swelling of the mucous membrane covering the bone. Large spurs or deviations of the septum pressing on the turbinates, are frequent causes of headache. 3. Headache resulting from acute or chronic inflammatory conditions of the accessory sinuses; these headaches are usually periodical. The pain commences in the morning and gradually increases for two or three hours. When most intense, discharge begins to flow from the nose, and the pain slowly subsides. When due to disease of the frontal sinus, the pain is usually most intense on top of the head towards the front part frontal bone; there may also be pain over the frontal region, radiating into the eyes. When intense, the pain is accompanied by superficial tenderness over the posterior part of the frontal bone, and over the innermost part of the orbit. Pain due to disease of the sphenoidal sinuses is readily referred to the back of the head, radiating down the back of the neck. Pain due to ethmoidal disease may be referred to the frontal region, or situated behind the eyes. Pain due to an antrum suppuration is more often situated over the malar bone. All these forms of headache may be accompanied by pain in the supra-orbital region, due to an associated enlargement of the middle turbinate. Smurthwait⁴⁷ finds that headache is frequently met with in those cases where the middle turbinate is tightly wedged against the septum. The removal of the anterior end of the turbinate by relieving this pressure, causes the headache to disappear. Somers⁴⁸ also finds nasal disease and neuralgia frequently associated. Aside from sinus affections, hypertrophy of the turbinates, and especially the middle, is the most frequent cause.

A new route for operating on malignant nasal tumors is described by Denker.⁴⁹ His method consists of making an extensive incision along the junction of the upper lip with the alveolus. The soft parts are dissected in the same manner as in the radical operation on the maxillary antrum. The antrum is then opened and enough of the antro-nasal wall is removed to expose the growth. After the removal

of the growth, the cheek is allowed to drop into place, and the incision is closed; all after-treatment is carried out through the nose. Three cases are described in which this plan was followed.

According to Myer⁵⁰ there are two ways in which conditions in the nose may affect the lachrymal apparatus: 1. Through reflex action which results in an increase of the secretions. 2. Conditions mechanically obstructing the lachrymal canal, the latter being the most important. The author has found as a frequent cause of epiphora a peculiar form of the inferior turbinate. The lower border was turned outward and upward, lying against the nasal wall at the insertion of the turbinate. As the opening of the lachrymal canal is just beneath the insertion of the turbinate, the slightest swelling of the turbinate will close the opening. In dealing with such cases, the author removes a portion of the turbinate if the passages are narrow; if they are normal or atrophic, he fractures the inferior turbinate at its insertion, by grasping it with a suitable forcep and turning it upward and inward. The turbinate is then held in proper position by gauze tampons. In the six cases operated upon the epiphora had disappeared in from eight to fourteen days.

Killian⁵¹ reports the results of his observations in twenty-two cases of choanal polypi. He believes they have their origin in the cavity of the maxillary antrum. In one case he saw the pedicle projecting out of an accessory opening.

Adenoids have received their usual attention. The question of anesthesia in adenoid operations has been discussed by Cline.⁵² He believes that as clean and thorough an operation can be done with a local as with a general anesthetic. Sprague⁵³ reports his observations in one thousand adenoid operations; ether was employed in all but two cases. He prefers this to any other anæsthetic. He considers chloroform as especially dangerous in adenoid cases, as they belong to that class of cases known as *habitus lymphaticus*, in which chloroform is contra-indicated, and in which most deaths from chloroform have occurred. The removal of adenoid vegetations through the nasal passages by a new method, is described by Freer,⁵⁴ who has devised a slender forceps with a smooth rounded beak. It is of the general model originally devised by Ingalls for the removal of bone in the nose. With this instrument the author operates through the nasal fossae. The question of post-operative hemorrhage following the removal of the pharyngeal tonsil, according to Dupuy,⁵⁵ has not been accorded the consideration it deserves by the writers of text books. Dupuy was able to find reports of thirty-eight cases of alarming hemorrhage following adenectomy, eleven of which were fatal. Compared to the great number of adenectomies, the fatal results appear to be few; this is believed to be due to a failure of reporting the fatal cases.

A case of sarcoma of the naso-pharynx treated by injections of adrenalin, in which encouraging results were obtained, is reported by Rhodes;⁵⁶ he followed the method first suggested by Mahu in 1903. It consists in injecting 5 to 10 minims of the following into the substance of the tumor; Adrenalin chloride, 0.12 gramme; boric acid, 0.16 gramme; chloretone, 0.025 gramme; distilled water, 15 gramme; these injections were made each day, selecting a different portion of the tumor each time. The encouraging results of the treatment in the author's case were the immediate reduction in the size of the sarcomatous mass, and the temporary alleviation of pain; though the patient died from exhaustion due to the inroads of the disease.

Some of the points bearing on the surgical anatomy and the physiology of the tonsil are discussed by Wilson.⁵⁷ The tonsil is well developed at the end of the first year, but apparently does not reach maturity until the fifth year. Its activity has been demonstrated at the end of fetal life, not only by the development of lymphocytes in the follicles, but by the infiltration of leucocytes in the over-lying epithelium. The tonsil is enveloped in a capsule of connective tissue, which is normally one mm. thick. Wilson believes the principal blood supply in man comes from the facial, either through a distinct tonsillar branch or the ascending palatine branch of the facial. The hemorrhage which occurs at times in tonsillar operations is due to an injury to the branches of the lingual and superior palatine artery. The germ centers of the follicles contain many cells undergoing mitotic division. From these follicles the lymphocytes may pass directly into the lymph system, or through the mucous membrane into the mouth. As far as our present knowledge goes, the first do not appear to differ in any way from those secreted by the follicular glands; as for the latter we have no definite knowledge, as it may be more of an excretion than a secretion. The tonsil, as a portal of microbic invasion, is discussed by Jacobi.⁵⁸ He believes that a surface lesion must always exist. When a living germ or toxine is to find access, and even that when tonsils, or what is more common, a single follicle becomes inflamed, the very venous obstruction will exert a bactericidal influence of the stagnating blood serum. Goodale⁵⁹ takes the opposite view. He states that in infectious arthritis evidence has accumulated to show that the tonsil forms a frequent portal of entry. The tonsil may be of normal size, and show nothing on clinical examination; after excision it will always give signs of lacunar retention. The diseased faucial tonsil as a causal factor in respiratory and gastric diseases is discussed by Solenberger.⁶⁰ He believes that the pathological conditions associated with the submerged tonsils are too frequently overlooked. The caseous exudates secreted by the crypts accumulate in

the supra-tonsillar fossa, and are undoubtedly swallowed during eating. The accumulated secretions besides being irritant, form excellent culture media for the cultivation of pathogenic organisms. There are frequent attacks of acute inflammation which spread to the surrounding tissues. He makes an earnest plea for the radical removal of such tonsils. The indications for surgical interference, in disease of the faucial tonsils and the methods of choice in operating, with an analysis of 480 cases is given by Cassilberry.⁶¹ This analysis shows that endocarditis, nephritis, and arthritis follow infections of the tonsils. He is also inclined to believe that infection of tuberculosis may take place through the tonsils, to the cervical glands, then through the entire system. He regards a persistent cervical adenitis as an indication for a tonsillectomy. He has never found any ultimate harm result from the operation; nothing but good.

Davis⁶² offers a new procedure in the treatment of Ludwig's angina, or septic infection of the throat and neck. It consists of making an incision in the median line between the symphysis and the hyoid bone, and carried through all the tissues into the mouth; there is hemorrhage from the incision when made early, and drainage will be sufficient. A case in which death resulted from a suppurating tonsil is reported by Kenerson.⁶³ The abscess had been repeatedly opened and tracheotomy had been performed, but an edema had appeared which spread over both sides of the neck and down to the clavicles, resulting in death on the eleventh day. Melzi⁶⁴ reports a number of cases of peritonsillitis aborted by the administration of brewer's yeast, 8 to 20 g. in twenty-four hours.

The value of a throat examination in calling attention to the presence of unsuspected pulmonary tuberculosis, is pointed out by Harland.⁶⁵ In many cases of tuberculosis of the lungs, the disease is often accompanied by considerable wasting of the mucous membrane of the upper air tract, with changes of the quality of the secretions. The symptoms associated with these changes in the nose and throat, are suggestive, namely: Constantly recurring colds; continued dropping of mucus from the nasal pharynx into the throat; hoarseness and coughing. The mucous membrane is often found wasted and bathed with sero-mucus. There is often a persistent sub-acute pharyngitis; such symptoms and appearances should lead to inquiry for other signs of the disease. The medical treatment, the climatic treatment, and the surgical treatment of tuberculosis of the upper air tract are discussed by Bane, Freudenthal and Levy.⁶⁶ Bane divides the medical treatment into constitutional and local. Under the former he considers forced feeding, rest, guaiacol, and creosote as the best aids: he considers formalin the most efficient local remedy. Freudenthal emphasizes the necessity of giving tuberculous patients the benefit of cli-

matic treatment. He lays great stress on the value of sunlight; he also considers high altitudes of paramount importance in certain cases. Levy states that deep incisions are valuable in laryngeal tuberculosis, when there is uniform infiltration, or in edema. The influence of these incisions are increased by rubbing in lactic acid. Excision of tuberculous masses should be limited to those cases in which there is a certainty of complete removal of the entire focus of the disease. The extent of the involvement is often greater than can be determined by the laryngoscopic or microscopic examination. Curettement is valuable in ulcerations and soft excrescences, the character of the ulceration, modifying, however, its applicability. The galvano-cautery is useful in small, easily accessible tuberculous ulcerations. Tracheotomy may prove of value in children, and is always indicated for the relief of dyspnea. Laryngectomy is probably never indicated. The indications for a curative tracheotomy in tuberculosis of the larynx as given by Henrici⁶⁷ are: 1. The operation should be done only in cases under twenty years. 2. The lungs should be free or only slightly involved. 3. The process in the larynx should be of a benign character. The treatment of laryngeal tuberculosis by silver fluoid in a 1 per cent solution, is advocated by Megnon.⁶⁸ He has employed this remedy for two years in a number of cases, with good results.

The advantages of the direct endo-laryngeal method of removing laryngeal-papillomata in children are given by Patterson.⁶⁹ The instruments required are a fish-tail tube spatula and a straight forceps. The Kierstein lamp is used to illuminate the larynx. The patient is placed on the back with the head hanging over the edge of the table. Chloroform is used as an anesthetic and cocaine is used locally. The forceps are introduced through the tube, and the growths are rapidly removed. This method has given the author good results. Should recurrence take place, he advises a treacheotomy, as a more thorough removal of the growth can be made. Kroellreutter⁷⁰ reports a case of laryngeal-papilloma in which good results followed the administration of Fowler's solution. In another case he obtained good results following the persistent use of potassium iodide.

Jackson⁷¹ regards the prognosis of a laryngeal cancer in which an early thyrotomy has been done, to be better than that of a chronic laryngitis. If the condition is observed late, a total or partial laryngectomy will probably prolong life for a variable period, but recurrence is fairly certain. He states that the early and curable stages of laryngeal cancer are characterized by nothing but hoarseness, which may disappear or recur. Cough, pain, glandular enlargement, emaciation, cachexia are present only after the curable stage is passed. MacKenzie⁷² makes an appeal for the naked eye diagnosis

of malignant tumors of the larynx. Every resource and refinement of clinical diagnosis including the exclusion of lues by the iodides, and tuberculosis by tuberculin, should be resorted to before the microscope is resorted to. The objections which he makes to the indiscriminate removal of tissue for examination are: 1. It subjects the patient to the dangers of auto-infection at the point of incision, and to metastasis elsewhere. 2. It stimulates the local growth of the cancer. 3. The method is often inconclusive, misleading, and sometimes practically impossible. Delevan⁷³ states that results of thyrotomy with the removal of the diseased soft parts are estimated at 44 per cent, and quotes Butlin, who found that 70 per cent of his cases had lived more than three years. The statistics of laryngectomy show that only 15 or 16 per cent have remained alive more than three years.

The direct methods of examination of trachea, bronchus and esophagus have received considerable attention. Killian⁷⁴ reports the removal of a collar button from the left upper bronchus in a boy of twelve, and a piece of bone from the right bronchus in a man of twenty-four. Von Schroeter⁷⁵ reports a case of carcinoma of the lung in which the tumor was not only seen through the bronchoscope, but a portion was removed for microscopic examination. He also reports that L. Von Schroeter has employed a new method of illumination which far excels the present methods. Stillman⁷⁶ reports the removal of an open safety pin from the esophagus, by means of a long forceps through the esophagoscope. The pin was found to be located at 25 cm. from the upper incisors; the point of the pin was upward as shown by the X-ray. The patient noticed no ill effects. He makes a plea for this method in preference to the cutting operations, which show such a high mortality. Henrici⁷⁷ reports the removal of a bone from the bronchus. Von Schroeter⁷⁸ reports a case in which a syphilitic gumma at the bifurcation, was diagnosed by means of the bronchoscope.

The relation of the blood supply of the inner ear has been studied by Shambaugh.⁷⁹ He finds that the cochlear division of the internal auditory artery branches in a fan-like form with festooned junctions between the radii. In the terminal coil of the cochlea, there is a terminal artery. The possibility of the vestibular apparatus being damaged apart from the cochlea, and vice versa, is therefore evident, but not likely to occur in cases of hemorrhage. The main exit for the blood is through the vein of the aqueducts cochlea. His observations confirm those of Alexander and Politzer, that there is a communication between the blood vessels of the middle and internal ear; hence the tinnitus in otosclerosis of the middle ear, and the tendency to the involvement of the labyrinth in catarrhal, as well as in suppurative processes of the tympanum. The aims and limita-

tions of intra-nasal surgery in the treatment of chronic non-suppurative affections of the middle ear, have been discussed by Harris,⁸⁰ who concludes as follows: 1. The nose plays an important role as a causative factor in many cases of otitis media; but by no means in all such cases. 2. That the lesion in the nose is usually of an obstructive nature, acting as an obstacle to proper ventilation of the middle ear. 3. That in beginning cases of hypertrophic otitis media, a certain amount of improvement can be confidently expected by restoring proper ventilation of the cavity through measures addressed to the nose, with the aim of relieving naso-pharyngeal and tubal inflammation; but that (a) as yet only such cases of disease call for nasal treatment as show pathological changes in the throat; these demanding attention apart from the condition of the ear; (b) that it is important to determine the true nature of the process in the middle ear, as the sclerotic or so-called hyperplastic form is not influenced at all by such treatment; and (c) that adhesive changes and ankyloses cannot be expected to yield, however completely the nasal obstruction is removed. 4. That an important result to be secured by treatment, is the relief afforded from the repeated attacks of rhinitis, which by their effects on the eustachian tube are wont to aggravate the chronic condition. 5. That tinnitus aurium and vertigo are at times benefitted by nasal treatment. 6. And finally, that because of the importance of treatment to the nose and throat, a closer association of otology and rhinology is urgently demanded.

Grandenigo³¹ believes that the occurrence of a painful fluctuating swelling on top of the head near the middle line, extending to the foramina emissaria Santorini, in the posterior part of the sagittal suture, to be characteristic of the thrombosis of the longitudinal sinus. An operative measure for thrombosis of the cavernous sinus is proposed by Langworthy.⁸² His method consists of elongating the usual frontal sinus incision downward along the nasal bone, and retracting the eye out of the field; the nasal wall of the orbit is removed over a considerable area, together with the nasal bone on that side. The entire structures of the nasal fossa are then removed. This at once exposes the anterior surface of the body of the sphenoid with the opening of the sphenoid cavity. The anterior wall of the sphenoid sinus is next removed, as well as the external or lateral wall, against which rests the cavernous sinus. From this point the sinus is opened with a knife and a blunt dissector. If unsuccessful in opening the sinus, the external wound is closed, and according to Langworthy, the eye remains uninjured, and nothing is lost by the attempt.

Twenty cases are reported by Neumann,⁸⁸ in which he had performed the acute and radical mastoid operations under local anesthe-

sia. His method of procedure is as follows: The patient is given a full meal, as it has been found that the danger of a cocaine intoxication is greatly lessened after a full meal. The field of operation is prepared in the usual way, and a solution consisting of 5 cm. of a 1 per cent solution of cocaine, 12 drops of adrenalin, and 3 cm. of normal salt solution is injected under the periosteum at several points over the mastoid. The author has devised a special syringe with a strong needle. These injections are easily made over all portions of the mastoid, excepting the tip where the periosteum is very adherent, but even these portions can be made anaesthetic. The important point is to anaesthetize the anterior surface of the mastoid; this is done by inserting the needle just at the posterior insertion of the auricle, parallel to the posterior wall of the auditory canal. At the end of ten minutes the operation can be done. For the radical operation from 7 to 8 cm. and a 1 per cent solution of cocaine, 15 drops of adrenalin, and 5 to 6 cm. of normal salt solution are used. The injections are made at the same point, with additional injections in the superior, inferior, anterior, and posterior walls of the external auditory canal, just at the junction of the cartilaginous and membranous canal. The operations were completed with practically no pain except in the radical operations, the curetting of the Eustachian tube was always painful, even when a pledget of cotton was soaked in a 20 per cent solution of cocaine had been applied, but as this required only a moment, this is not looked upon as a serious objection.

The value of nystagmus in a differential diagnosis of cerebellar abscess and suppuration of the labyrinth, is pointed out by Neumann.⁸⁴ In suppuration of the labyrinth the nystagmus becomes less and less marked, and finally disappears as the suppuration extends; while in cerebellar abscess the nystagmus increases as the disease progresses. In suppuration of the labyrinth, the nystagmus occurs in the beginning when the eye is turned toward the diseased side; whereas this may disappear and the nystagmus still be present when the eye is turned to the well side. In cerebellar abscess the conditions are reversed, and the nystagmus is first observed when the eye is turned to the normal side, and then later turns to the diseased side. When this form of nystagmus is observed, a positive diagnosis of cerebellar abscess can be made. Another point in the diagnosis, is, that if after the labyrinth has been opened by operation, the nystagmus due to the labyrinth trouble rapidly subsides; while the nystagmus due to the cerebellar abscess remains the same.

The clinical value of blood examinations in otitis media purulenta and its complications have been discussed by Hubby,⁸⁵ who believes that the condition of the blood to be an accurate and delicate barome-

ter of the entrance of pathogenic bacteria and their products. He says it is necessary to make repeated examinations and determine the progress of the process; but the clinical symptoms must be given greater weight than a mere leucocyte determination.

The question of a primary tuberculosis of the mastoid in childhood, was taken up by Ismer,⁸⁸ who found that 13 per cent of all mastoid cases are tubercular; about half of the cases are primary, and that this infection takes place through the blood. The other half of the cases are secondary to the tuberculosis of the lymphatic tissue. He found that the onset of the disease is a gradual one, with little or no pain. The macroscopic appearance at the time of operation does not lead one to suspect a tuberculosis. The only positive evidence of a tuberculosis of the mastoid, is the microscopic examination of the diseased tissues. The prognosis following the operation of a primary tubercular mastoiditis is, according to Ismer, very good; but in the secondary cases, the spreading of the primary focus menaces the life of the patient.

As a simple means of relieving the earache of acute otitis media, Neumann⁸⁷ has found that by introducing into the external auditory canal, cotton compresses moistened with ordinary lead water, and applied to the concha and its vicinity, complete relief is obtained. The treatment of otitis media by Bier's artificially induced hypermia, has received considerable attention. After reviewing the reports of Keppler, Heine, Hinsberg, Stanger and Fleischmann, and analyzing the results obtained in the ear clinic at Halla, Ismer⁸⁸ has arrived at the following conclusions: 1. The treatment of otitis media by Bier's method, is not free from danger, as the treatment is limited to this procedure; the proper moment for surgical interference may pass, and the outcome be unfavorable. 2. More experience will be required in order to determine for what cases this form of treatment is best suited, and how long it may be safely continued. This form of treatment seems to be especially dangerous in the so-called cases of diplococcus otitis. 4. Bier's method is absolutely contra-indicated in cases of otitis media where there are intracranial complications present. The indications for operation in chronic purulent otitis media have received considerable attention. There seems to be a trend to greater conservatism. The indications have been discussed by Smye⁸⁹ and Knapp.⁹⁰

A new method for exposing mastoid bone is described by Hammond.⁹¹ The incision is triangular instead of being straight, as in the usual method; beginning one-half inch back of the superior post-auricular attachment, extending through all the tissues obliquely backward and downward along the hairy margin to a point just below the middle of the posterior border. From this point the incision is

again carried through all the soft tissues forward and downward to the posterior border of the digastric fossa. By this incision all the post-auricular vessels and nerves are avoided, except some of the minute auricular branches of the occipital. The radical mastoid operation is modified by Bryant⁹² and Heath⁹³ to allow the preservation of normal hearing. Bryant makes a U-shaped myringotomy and opens the mastoid antrum. The outer anterior wall of the antrum is taken away with the exception of enough to support the annulus and adjacent membrana tympani. By this procedure the upper and back part of the tympanum is drained through the meatus, without permanent injury to the sound-conducting apparatus. The results obtained from the radical mastoid operation in chronic purulent otitis media, have been discussed by Smith⁹⁴ and Dench.⁹⁵ The latter found that in a series of 95 cases, the cures amounted to exactly 80 per cent. In four of these a facial paralysis occurred, but the function was later fully restored. As for the hearing, there was an improvement in the majority of the cases.

The blood-clot method of wound repair in aural surgery, has been the subject of considerable discussion during the past year. Sprague,⁹⁶ Blake,⁹⁷ Riek,⁹⁸ and Bryant⁹⁹ are among its most ardent advocates. Sprague has employed this method in 69 acute mastoid cases, 42 of which healed in from 7 to 15 days. He also employed the method in 16 radical cases; only 2 succeeded perfectly, and 5 partially. According to Sprague, the blood clot is contra-indicated in all acute infectious diseases, in tuberculosis, diabetes, or chronic constitutional ailments. He also considers all cases of intracranial involvement, as contra-indications for any blood clot method. Dench¹⁰⁰ reports only failures from this method; and Jack's¹⁰¹ experience in the Massachusetts Charitable Eye and Ear Infirmary, led him to conclude that this method has no advantage over the ones generally employed.

The relation of ear affections and mental disturbances has recently received more attention. Amberg¹⁰² found that the ear participates in the production of mental disturbances, directly or indirectly. The mental disturbances can be brought about in two ways: 1. By causing hallucinations, respectively, illusions, the influence of which is more or less strong, according to the predisposition of the afflicted individual. Entirely different from these disturbances, are; 2, those in which the ear and its surrounding parts are simply the place in which a toxemia is primarily created, or in which an abscess engaged the vitality of the body. Both conditions can produce mental disturbances and aggravating pre-existing mental abnormal conditions. He thinks it very probable also that without a predisposition, mental disturbances can be created; if for example, the annoying subjective noises create a state of exhaustion, e. g. neurasthenia; these condi-

tions are of import from a forensic point of view. Amberg believes that ears of inmates of insane asylums should be examined, and that patients suffering from mental disturbances who exhibit phenomena on the part of the organ of hearing, but also of other organs, such as the kidneys, on account of the fact that the disturbance in the ear, although in itself a new center, may only be a reflex disturbance. The benefit of surgical interference in ear affections should be bestowed on the insane in need of it. Bryant¹⁰⁸ examined 161 patients at the Manhattan Hospital, most of whom were chosen on account of their hallucinations of hearing. The rest were taken without any special plan. The classification is as follows: Dementia, sixty-three; paranoia, twenty; dementia paralytica, twenty; alcoholic insanity, nineteen; mania, sixteen; senile dementia, fourteen; various, three. The ear classification is as follows: Otitis media catarrhalis, seventy-one; otitis media purulenta (active or cicatrized), thirty-eight; foreign bodies, fourteen; labyrinthine or nerve disease, twenty-three. Among 161 cases there were 15 with no ear disease; hallucination of hearing, 134 cases, and only three cases had perfect normal hearing. Of the 134 cases with hallucinations, 120 had ear disease; 63 with tinnitus. The improvement of the total 161 cases due to oto-rhinological treatment was only 37-10 per cent, while out of the selected cases, 62 showed marked improvement, and the balance some improvement.

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DERMATOLOGY AND SYPHILIS.

IN CHARGE OF

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It is the intention of the writer to refer in this article to only those papers of the year which have appealed to him as of the greatest practical value and interest. Ultra-scientific observations are difficult to concisely abstract, and require time and space for their proper elucidation, therefore we will make it our effort to give a purely practical outline of this purely practical subject—the “Etiology of Syphilis.” The year 1906 marks an epoch in the history of medicine, through its great work in advancing the knowledge of syphilis. Not since the day of Hunter and Ricord has a marked advance been made in the study of this disease, which can, in its wayward, subtle way, imitate almost any group in the field of dermatology; and, we may go farther and say, with Hutchinson and Keyes, that no disease is sacred to its mimicry. Therefore, as syphilis is of such vital significance to dermatology as a whole, and as a proper understanding of the work of the year in this disease is therefore of such importance to all, we intend to devote this article to the subject of syphilis.

In the latter part of our review of last year, we gave a lengthy account of the findings of Schaudinn and Hoffman in their investigations of syphilitic lesions. Schaudinn, a biologist and an expert upon protozoa, was appointed by the German government to investigate the work of Siegel, who claimed to have found a protozoa-like organism in the lesions and blood of syphilitics, which he called the *cytorrhysis lues*. Thus, during the investigation of Siegel's work, Schaudinn discovered a peculiar corkscrew-shaped organism from the scrapings and serum from chancres, which he named *spirochaete pallida*. Schaudinn at once called to assist him Dr. Hoffman, an army surgeon, versed in the clinical types of syphilis. Their first publication occurred in April, 1905. The scientific world, ever ready for new fields, began work at once, and an enormous literature quickly accumulated. Journals teemed with confirmatory reports of Schaudinn and Hoffman's findings. At the close of the year 1905, the organism of Schaudinn had been found in the initial lesion of syphilis, in the lymphatic glands, the blood of syphilitics and the scrapings of serum from secondary syphilitic lesions. Other forms of *spirochaete* had also been found in syphilis, yaws and carcinoma, but the pale form, as described by Schaudinn, had only been demonstrated from syphilitic lesions.

Schaudinn at first classed this organism as a true *spirochaete*, but in

October of the same year he changed his opinion, taking it from the group of protozoa and placing it, after Villemin, with the spironema, calling it the spironema pallida. F. G. Novy, with others, on account of the apparent resistance of the organism, believes that it rather approaches the bacteria in its qualities.

The literature upon the organism of Schaudinn illustrates the wonderful activity of the age, and particularly of the scientific world. The writer has before him a complete bibliography upon this subject to November of this year; page after page, in fine type, enumerating hundreds of papers and monographs, from hundreds of investigations, tells the story of labor and the thirst for knowledge. Yet it is not with pride that we see so few accredited to American writers. Germany is first upon this list, next Italy, then France and England. How sad is life and how cruel is fate, when we pause in the study of this literature to think that death has deprived the world of the great Schaudinn, and has taken him from the midst of his labors all too soon for him to realize the greatest achievement of his life; in fact, one of the greatest achievements in medicine.

The beautiful technique and methods described by Leviditi, discovered the organism of Schaudinn in syphilitic lesions. This method thus proved the means by which was unfolded a wealth of knowledge, and gave to the study of the etiology and pathology of syphilis a new impetus. Thus to that master of technique, Leviditi, we owe much, as through his method, given below, we are enabled to study the organism of Schaudinn in the tissues, their condition, changes and their relation to the known pathological features of the disease. Leviditi's method is as follows: First, place a small piece of the tissue in 10 per cent. solution of formalin; harden in alcohol, 95 per cent.; wash in distilled water five minutes; stain in 1 per cent. solution of silver nitrate in distilled water for three days; then leave the tissue in the following mixture for twenty-four hours:

Pyrogallic acid	4
Formalin	5
Distilled water	100

Wash in distilled water, then pass into alcohol xylol and prepare in paraffin. Stain sections in Giemsa stain for three or four minutes; differentiate with alcohol and oil of cloves, then wash with alcohol and clear with oil of bergamot, then wash in xylol and mount in balsam. By this method the spirochaete are stained black and can be easily seen, as they are swollen by the silver nitrate. The cells are blue and the connective tissue is yellowish-green. It is not necessary that the sections should be very thin. Through this method, which has been variously modified, the little corkscrews can be seen through the tissue.

As was said before, it would be impossible to quote each paper of importance in the study of the etiology of syphilis, and we therefore give a resume of the most practical points. The impregnation method of Leviditi shows the spirochaete in every known syphilitic lesion. The silver nitrate swells the organisms beyond their normal proportions, thus rendering them easily visible. In infants dead of syphilis, they are massed throughout the tissues in myriads, in the lung, liver, kidneys, spleen, skin, heart and vessels, everywhere. In many instances the tissues and system seem to be literally overwhelmed with them. No picture, as many writers state, can be more convincing of the pathogenicity of an organism. In the acquired form of the disease, the organisms, as would be expected, are not found in such numbers, yet the lesions present them in proportion to the severity of the type and acuteness of the pathologic change. The condylomata and chancres prove to be a particularly rich flora. It is believed by various observers that through the initial inoculation, the chancre, the organism gains access to the lymphatic system, and thus contaminates the general circulation, which carries the parasites to the skin and various organs, where they lodge as small emboli, and by proliferation cause the lesions peculiar to the disease. Thus, in the so-called secondary outbreak, there is an acute flooding of the system, while at numerous points in the skin, minute foci begin to proliferate and produce the secondary roseola, and later the more permanent papular stages. Finally, the tertiary lesions are formed by the reawakening of old foci of infection.

This explains very beautifully and rationally the pathology of the disease, and it is interesting to compare the present developing pathology with the known histopathology as laid down in late years by Neuman and Unna. How beautifully the spirochaete conforms to the studies of these writers; how easily, too, does it seem to fit exactly the clinical types of the disease and the facts known and demonstrated years ago. The early flooding of the system, the dissemination of the parasite, secondary efflorescences, tertiary lesions, etc. It has, for instance, long been known that the syphilitic virus dies soon after the death of its host, the syphilitic, as no authentic case of post-mortem infection has been reported. The spirochaete we know, being a protozoan organism, dies soon after its host, as other forms of spirochaete do not live but a short time in dead matter. Therefore to infect, the organism must shortly have left an animal body. It has long been known that the blood from syphilitics is rarely infectious. Nattan-Larrier and A. Bergeron find the organism in the blood from secondary lesions, while it is very difficult to demonstrate them from the peripheral circulation in acquired syphilis. In the former instance, the parasite is probably washed from the lesion by the blood, and is then, of course, easily demonstrable.

Revaut and Ronselle speak of the great difficulty of catching the organism from the peripheral circulation of adults, while in syphilitic infants, fatally ill from the disease, it is easily found in the blood from the finger-tips. A microphotograph of such a smear, showing the spirochaete in a clump, not unlike a bunch of earthworms, appears in their article.

Leviditi and Petresco obtained the spirochaete from the serum of blisters artificially produced on the apparently sound skin of syphilitic individuals during the secondary stage. It is a well-known fact that during the secondary period of syphilis a lesion is likely to occur at points of previous irritation, trauma, or pathologic change, which can probably be explained from the advantage of our present knowledge by the fact that in such a previously changed point the vessel's walls and their caliber are altered, there is a consequent change in the blood-stream, an outward mechanical forcing of the spirochaete, which thus lodge upon the vessel-wall, or pass out with the serum or leucocytes, and by proliferation produce a lesion. Of Leviditi and Petresco's blister experiments, the above is probably an explanation.

It has been reported by Levy-Bing that mercury has the property of causing the rapid disappearance of the spirochaete from syphilitic lesions, while others assert that it has no effect upon them. Neisser states, in his experiments in Batavia, upon syphilis in apes, that mercury does not affect materially the course of the disease.

Syphilis is such a protean disease, and causes such an extended group of symptoms, that it is with intense interest that we await the investigations in relation to the spirochaete in the so-called parasymphilitic affections, tabes and paresis. G. Catola failed to find the organism of Schaudinn by the Leviditi method in five cases of paresis and several of tabes, and he believes, through his researches and those of Marenesco and Minea, that paresis is not due directly to the organism of syphilis, and is not, therefore, to be considered a syndrome. Leriaux and Geets, in their culture experiments from the spinal fluid of forty-two cases of acute syphilis, succeeded in finding the organism in three cases. These writers attempted the cultivation of the spirochaete, and claim startling results, which, if confirmed, will give the whole life-cycle of the organism. The spinal fluid, as was said before, from forty-two cases of secondary syphilis, was drawn. This fluid was diluted in the proportion of 1 to 2 with peptone bouillon and placed in the incubator for three to four days at 37 degrees, then inoculated upon pig serum, upon which appeared a very thin growth. In the different stages of development the authors first observed under the microscope an oval body that resembled the cytorrhyses of Siegel, and then a trypanosome-like body and then the trypanema of

Schaudinn enclosed in protoplasmic matter. It will be remembered that Siegel claimed that his organism, the *cytorrhyses lues*, was the specific organism of syphilis, as he found it in the blood of syphilitic individuals and also in the blood of rabbits when inoculated from the blood of syphilitics. If the findings of Leuriaux and Geets are confirmed by others and inoculation experiments, then we have the whole picture of the pathogenesis of syphilis before us, a polymorphic organism undergoing a peculiar life-cycle in the body of an animal, causing in man and monkeys the syndrome which we call syphilis. If this be true, then the work of the years 1905 and 1906 will prove of untold benefit to humanity, then the mysteries of tabes, paresis and the unique types of syphilis will be unraveled and probably in the near future the terminal sequelæ of this disease can be prevented. From our present knowledge of the *spirochaete pallida* and the pathology of syphilis, the mere thought that this organism may be the cause of the disease assists us in its therapeutic management and in the more proper understanding of its unique and wayward clinical types.

Thibierg, in a most excellent résumé of this question, asks at what conclusions are we to arrive in the study of this subject? Are we to consider the *spirochaete pallida* the specific pathologic agent of syphilis? He then reviews the rules of Koch and sums up his conclusions as follows: The organism of Schaudinn and Hoffman is found in the blood of syphilitics, in all the lesions of secondary syphilis and is remarkably frequent in the cutaneous and visceral lesions of hereditary syphilis. The organism has been observed in the walls of gummas, although the virulence of the latter lesion has always been held in doubt. They have been found in the inoculation experiments with monkeys and the accidental inoculations in man. It is equally proved that the *spirochaete pallida* are not observed in lesions not in relation to syphilis. It has been searched for in various other diseases of the skin, in simple chancre, herpes and other ulcerating conditions. This parasite responds, then, to the two first terms in the definition of a microorganism's pathogenesis. The experiments upon animals which permit the reproduction of lesions which constantly contain the *spirochaete* is a strong argument in the pathogenicity of the organism. From these various studies, results and findings, he believes that the *spirochaete* can well be called the parasite of syphilis.

It has been the usual teaching that the tertiary or gummatous lesions were not infectious, but through the experiments of Finger and Neisser, who have caused primary and secondary syphilis in monkeys by inoculation from material from a gumma, or tertiary lesion, we must admit that the tertiary lesions do contain the active prin-

ciple of syphilis, as the spirochaete have been found in the gummata and tertiary lesions. They are, however, mostly confined to the walls and peripheral portion of the lesion. Through the investigation of Leviditi, we know that the healthy spirochaete are not found in the broken-down contents of the gumma, as they, with the tissues, undergo degeneration and death, but the typical, healthy-looking organism can be demonstrated in the gumma wall. This would confirm the clinical findings of various older writers, as numerous observers have held that gummata were infectious. If the inoculation material happened to be obtained from the wall of the gumma, and thus contained live spirochaete, it would be as infectious as material from a secondary lesion, according to Williams.

From the above remarks and the scientific data which is piling up every day to assist in proving the pathogenicity of the spirochaete pallida, one can readily see that we are on the eve of the confirmation demanded by Koch. This confirmation only needs the cultivation of the organism on artificial media and the inoculation of the organism thus cultivated into a susceptible monkey, and the production therein of the syphilitic syndrome.

Syphilis in Monkeys.—Various investigators have carried on the work initiated by Metchnikoff and Roux, Neisser and Lassar. Neisser has been working in Batavia with an unlimited supply of material. The results he has obtained are very important. He finds the period of incubation in monkeys is from three to five weeks. The most favorable point he has found upon the eyebrows and upon the genital organs, and the best results were obtained from fresh material such as condylomata, mucous patches and papules. Inoculations from the blood and serum did not succeed; however, he had one successful inoculation from material from a tertiary lesion. He also obtained successful results in inoculations from the spleen, bone marrow, lymphatic glands and testicles. Negative results followed the use of the spinal cord, ovaries, kidneys, muscles and liver. The virulence in all cases seemed to be of about the same degree, although it seemed that it was slightly increased by continuous passage through monkeys. Higher monkeys are more susceptible than the lower ones. Subcutaneous inoculations were never successful, and Neisser believes that it is possible to increase the production of antibodies in an organism by subcutaneous injection of the virus. The administration of mercury did not influence either the development of the primary lesions or the general course of the disease.

Metchnikoff and Roux have established a dangerous precedent and false security in their experiments with the syphilitic virus, claiming that it is destroyed after inoculation by the application of a strong calomel salve. A young surgeon allowed himself to be inoculated

with syphilis, and in one hour after, a salve of calomel and lanolin was well rubbed into the part. No results were obtained from the inoculation, and it was thought the disease was probably prevented by the application of the antiseptic. Several writers took a public stand against this generalizing from a single case, as they feared it would lull into a sense of false security.

Neumann, in a very exhaustive article, reviews his position of many years ago on the etiology of relapses in syphilis. His conclusions may be summed up as follows:

1. The late syphilitic relapses, the relapses in situ as well as the metastatic relapses, have their origin in the microscopically demonstrable syphilitic products, including the syphilitic lymph glands, which persist after the disappearance of the clinical manifestations. These may exist a very long time, even more than a decade.

2. The complete elimination from the organism of all the germs of the disease as promptly as possible, therefore, follows as a fundamental indication in the treatment of syphilis.

Treatment of Syphilis.—Wild. remarks that the difficulty in estimating the relative value of the different methods of treatment of syphilis is largely due to the fact that most cases of primary or secondary syphilis will recover sooner or later spontaneously without any treatment whatsoever. He substantiates his remarks by referring to the number of patients with tertiary lesions who have never had any specific treatment, who have recovered from the primary and secondary symptoms. He, however, does not wish to go so far as Unna, who says that even the most severe secondary symptoms ultimately disappear without treatment, or as Fox, who takes the position that the disease tends in every case to run a natural course and heal spontaneously. This tendency, he remarks, is undoubtedly the explanation of the great success claimed for the various methods of treatment, especially those in vogue in England during the last quarter of a century, when there was a great reaction against the use of mercury. At this period vegetable alteratives were largely used, the benefits from which came from the groups of toxic glucosides which they contain. These glucosides are in the form of saponins, which have a peculiar effect upon the blood corpuscles. They are very unstable bodies, and are only obtained from the fresh plant. The author admits that many cases of syphilis will recover without mercury, but believes that both primary and secondary symptoms are much lessened by its use and the liability to tertiary lesions are diminished. He prefers mercury by the mouth as it is, taking it in all, the most satisfactory mode of treatment. He says he has never regretted giving mercury early, but he has several times regretted withholding mercury until the appearance of the secondary rash. The ideal treat-

ment is to maintain the influence of mercury upon the tissues for a sufficient length of time to destroy the virus, but without injury to the tissues, therefore the rate of the elimination of mercury is of great importance. For some months after a course of mercury it can be detected in the urine and therefore the patient is still under the control of the drug, and for this reason he also prefers the interval treatment. Full doses of the iodide of potash aids the elimination of mercury and prevents its action upon the body. For this reason it should be withheld in the acute stages of the disease. In speaking of the action of the iodides in syphilis he says they do not appear to be of a specific nature, but act in causing the absorption of lowly-organized cells. They do not prevent the occurrence of tertiary lesions, as he has seen them recur during a course of the iodide of potash. He lays particular stress upon treating the patient as well as the disease, keeping him at the highest point of resistance.

Burgi has carefully carried out a series of observations as to the amount of mercury secreted in the urine during and after administration. These observations were taken daily. He found that where daily inunctions of 2 gm. of mercury were given, small quantities of mercury could be detected in the urine after twenty-four to forty-eight hours. After this the amount excreted increased daily up to 2 milligrams. The amount of urine was also increased up to a certain period and then decreased. Similar results were obtained from the use of Wielander's method of having the patient wear a sack containing mercury near the skin. Patients occupying the same room also had small quantities of mercury in their urine. After administration by the mouth, the drug appeared in the urine very rapidly, and the diuretic action was more marked than following the inunctions. Following intramuscular and intravenous administration of the drug, the appearance in the urine was greater than following the inunctions and the increase was very rapid. In regard to the length of time mercury remains in the body after cessation of the administration of the drug, the author does not believe that this period exceeds six months.

Garceau strongly supports the use of the soluble salts by injection, and particularly the soziodolate of mercury. He says that, although they are inconvenient from the necessity of frequent injections, they are the best absorbed and tolerated, and there remains no danger of leaving mercury in the tissues for further trouble. These injections are less painful than the insoluble salts, and they keep the patient under almost daily supervision during the acute stages of the disease.

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BOOK REVIEWS.

MINOR OPERATIVE SURGERY, INCLUDING BANDAGE. By Henry R. Wharton, M. D. Sixth edition, enlarged and thoroughly revised. Lea Bros. & Company, Philadelphia and New York, 1905.

The fact that this work appears now in its sixth edition and comparatively only a short time has elapsed since the first edition was printed is, perhaps, the highest attest to its popularity which can be made. Gradually the importance of the work has increased with each edition. More and more place has been allotted to operative surgery and withal it has outgrown its original field of usefulness. In its full grown form it serves as an adequate guide to operations upon the cadaver, and is naturally of value to the younger surgeon. Nor is this all: in the chapter upon sutures, for instance, the various forms of wound closure are most fully taken up and the illustrations are adequate to give, even the uninitiated, an idea of the various ways in which wound edges may be coapted with the needle and thread. Short chapters upon the preparation of aseptic surgical dressings are also presented, hence, the volume may be dignified by the title of a small general work on surgery.

SURGICAL SUGGESTIONS. Practical Brevities in Surgical Diagnosis and Treatment. By Walter M. Brickner, M. D., Chief of Surgical Department, Mount Sinai Hospital Dispensary, New York, and Eli Moschcowitz, M. D., Assistant Physician, Mount Sinai Hospital Dispensary, New York. Duodecimo; 60 pages. New York: Surgery Publishing Co., 1906. Cloth, 50 cents.

This little book is most novel, not only on account of the many original terse and epigrammatic practical suggestions given, but its general appearance and attractive form. It contains 250 suggestions grouped under proper headings and its contents is carefully indexed. While some of the items are familiar to the practical surgeon, they are presented in a manner that will impress them on the reader's memory.

INTERNATIONAL CLINICS, a quarterly of illustrated clinical lectures, and especially prepared original articles. Edited by A. O. J. Kelly, A. M., M. D. Published by J. B. Lippincott Co., Philadelphia. Vol. IV. 16th Series. Cloth, \$2.00 per volume; half-leather, \$2.25.

The concluding volume of this series compares favorably with its predecessors. Among the interesting original articles may be mentioned: "Pulmonary Tuberculosis in the Middle-Aged and the Aged," by J. E. Squire; "The Principles of Treatment of Fractures of the Lower Extremities," by G. G. Ross; "The Treatment of Hemorrhoids," by G. P. Muller; "The Mastoid Operation," by C. W. Richardson.

The variety of subjects covered and the character of the articles places this volume consistently in sequence to its predecessors.

GENUSSMITTEL—GENUSSGIFTE? Von Dr. med. W. Reettger. 1906. Verlag von Elwin Staude. Berlin.

By means of a circular letter, the author has obtained the opinion of a large number of German physicians on the use and abuse of coffee and tea. The consensus seems to be that both are dangerous poisons.

ESSENTIALS OF HUMAN PHYSIOLOGY. By D. Noel Paton, M. D., etc. Second edition. 1905. W. T. Keener & Co., Chicago. William Green & Sons, Edinburgh and London.

This volume is intended primarily for medical students. It aims to put before them as succinctly as possible the essential facts of human physiology, laying especial emphasis upon those features that have clinical importance. The book cannot of course compete with real text books, such as Howells or Tigerstedt, but may well find a place in medical schools.

AN INTRODUCTION TO PHYSIOLOGY. By William Townsend Porter, M. D. Philadelphia and London: J. B. Lippincott Co. 1906.

The second edition of this invaluable laboratory guide will be welcomed by all who are interested in the teaching of physiology. The first edition, with its pamphlet predecessors, produced a revolution in physiological laboratory teaching throughout this country. Whether he uses it as a student's guide or not, every teacher of physiology will have this little volume at his elbow for guidance and inspiration.

OUTLINES OF APPLIED ANATOMY; with Special References to Surface Landmarks. By Richard J. A. Berry. With forty-six illustrations. Edinburg. William Green & Sons.

In this volume of two hundred and forty-four pages, the author has endeavored to bridge over the gap, which he mentions as existing between the work in the dissecting room and the practical work of the physician, in as far as the latter has an anatomical bearing. Assistance has been given to him by various specialists in preparing the illustrations and text, hence this gives the book an added value. It is essentially a study of anatomy upon the living subjects—the practical application of this science.

ATLAS AND TEXT-BOOK OF HUMAN ANATOMY. Volume I. By Prof. J. Sobotta, of Wurzburg. Edited, with additions, by J. Playfair McMurrich, A. M., Ph. D., Professor of Anatomy at the University of Michigan, Ann Arbor. Quarto volume of 258 pages, containing 320 illustrations, mostly all in colors. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$6.00 net; half morocco, \$7.00 net.

This volume, which is the first of the series, covers the bones, ligaments, joints and muscles of human anatomy. The accuracy of the illustrations entitles it to the name Atlas more than any similar publication which has appeared within the last few years. The thorough and concise descriptive text, explaining the numerous plates, makes it a volume of great value, both to the student who is working in the laboratory and the practitioner who has short space of time to refresh his memory on certain anatomical points. No wood-cuts are employed in this volume, but the plates are produced by multi-color lithography, in the majority of instances, the remainder being produced by the half-tone method. We would particularly recommend the chapter on Articulations.

THE AMERICAN ILLUSTRATED DICTIONARY. All the terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry and kindred branches; with over 100 new tables. By W. A. Newman Dorland, M. D. Fourth Revised Edition. Octavo of 836 pages, with 293 illustrations, 119 of them in colors. Philadelphia and London: W. B. Saunders Company, 1906. Flexible morocco, \$4.50 net; thumb indexed, \$5.00 net.

Since the last issue of this dictionary, that of August, 1905, over 2,000 new words have been defined, and numerous improvements made throughout the text. The illustrations have been increased by the addition of six new colored plates of various clinical conditions, making a medical dictionary sufficiently full for the varied requirements of all classes of medical men. The page is large, with a clear but compact typography, and the system used for expressing the sounds in the pronunciation of words is extremely simple and accurate. The book occupies a position midway between the large, unwieldy lexicon and the abridged student's dictionary, and avoids the disadvantages of each.

ABDOMINAL OPERATIONS. By B. G. A. Moynihan. Philadelphia and London: W. B. Saunders Company.

It is less than a year since the first volume of this valuable work appeared. Still, the demand has been so great for the book that a second edition was neces-

sary, and, furthermore, the well-known genius of hard work possessed by Mr. Moynihan would not allow this edition to go forth without a complete revision of the work. Chapters have been re-written and illustrations added in large numbers. In the newer portions of the work, credit is given to two American surgeons, W. J. Mayo and J. B. Murphy, for the impulse which led the author to their composition. There is little to be added in a review to what was stated of the first edition in its pages when it appeared. It was then admitted that no other single volume on abdominal operations quite came up to the mark, except by this eminent English surgeon, and the value of the second edition will be readily seen by those who are familiar with the first, and surely the library of no surgeon can be said to be complete unless it possesses one of them.

INTERNATIONAL CLINICS, a quarterly of illustrated clinical lectures, and especially prepared original articles. Edited by A. O. J. Kelly, A. M., M. D. Published by J. P. Lippincott Co., Philadelphia. Cloth, \$2.00 per volume; half leather, \$2.25. Volume III, 15th series.

As in the previous numbers of this publication, there are many articles of great value to the general practitioner. Of especial interest is the article on Ethyl Chloride, Its Value as a General Anesthetic, by Thomas D. Luke, B. S., F. R. C. S.; also an article on the Therapeutic Uses of the Roentgen Ray, by George C. Johnson. The other contributions are of equal value, but are too numerous to mention.

INTERNATIONAL CLINICS, a quarterly of illustrated clinical lectures, and especially prepared original articles. Edited by A. O. J. Kelly, A. M., M. D. Published by J. B. Lippincott Co., Philadelphia. Cloth, \$2.00 per volume; half-leather, \$2.25. Volume I, 16th series.

This volume includes the progress of medicine in the year 1905, by A. A. Stevens, D. L. Edsall and J. C. Bloodgood, making a most comprehensive compilation of the work accomplished in medicine, surgery and treatment. In addition to this, there are many original communications, similar to those that have appeared in the previous numbers of this series.

INTERNATIONAL CLINICS, a quarterly of illustrated clinical lectures, and especially prepared original articles. Edited by A. O. J. Kelly, A. M., M. D. Published by J. B. Lippincott Co., Philadelphia. Cloth, \$2.00 per volume; half-leather, \$2.25. Volume II, 16th series.

This volume contains similar material to that which has appeared in those already published. The contributions on medicine are particularly strong and of wide range. George G. Ross makes a valuable contribution to the treatment of fractures, especially those of the upper extremities.

INTERNATIONAL CLINICS, a quarterly of illustrated clinical lectures, and especially prepared original articles. Edited by A. O. J. Kelly, A. M., M. D. Published by J. B. Lippincott Co., Philadelphia. Cloth, \$2.00 per volume; half-leather, \$2.25. Volume III, 16th series.

This volume seems unusually inviting in its contents, a glance at which shows such interesting articles as the following: "Professor Fournier's Recent Modification of His Treatment of Syphilis," by H. Saingery; "Some Accidental Rashes Occurring in the Course of 250 Consecutive Cases of Typhoid Fever," by D. J. M. Miller; "The Hyperemia Treatment of Swollen Joints," by E. H. Bradford; "The Pelvis of Lame Women," by A. Pinard. We note that there is a consistent improvement in the character of articles appearing in this valuable series of clinics. It is a series of the greatest value to one busily engaged in general practice.

WHITMAN'S ORTHOPEDIC SURGERY. A Treatise on Orthopedic Surgery. By Royal Whitman, M. D., Instructor in Orthopedic Surgery in the College of Physicians and Surgeons, and Chief of Orthopedic Department in Vanderbilt Clinic, New York. Third Edition, revised and enlarged. Octavo, about 900 pages, with 554 illustrations, mostly original. Cloth, \$5.50 net. Lea Bros. & Co., Philadelphia and New York.

New material and many new illustrations have been added in this new edition. The volume presents a thorough revision and amendment of the last edition. Although the work is of particular value to students as a text-book, and to practitioners of medicine as a reference book, it has a distinct value to those working in the special field which it covers, in that statistics and data are included. Much that is new to surgery is set forth in the chapters on congenital dislocation of the hip, and coxa vara. In the consideration of the latter subject, the author describes his treatment for complete and impacted fracture of the neck of the femur. Noteworthy among the especially attractive features of this work is the clear, concise manner in which the author sets forth his subjects, arranging them in logical order, and carefully avoiding the tendency to introduce lengthy reports of cases and other material that make tedious reading for the student.

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